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ABSTRACT

Specific objectives of a project to translate V-TECS (Vocational-Technical Consortium of States) catalogs of performance objectives into viable programs of instruction ready for implementation in the secondary and postsecondary training institutions of the State of Kentucky were the following: (1) To teach selected personnel to develop competency-based curriculum packages, (2) to develop 10 curriculum packages, in the areas of Auto Body, Bank Teller, Carpentry, Cashier Checker, Child Care, Dental Assistant, Food Preparation, Machine Shop, Secretarial, and Tractor Mechanic, and (3) to determine the usability of modules. Domain study, state-of-the-art, task booklet, field review catalog, and final catalog of objectives and criterion referenced measures were developed in six of the curriculum areas. Four handbooks were developed: Development of Kentucky's Model for Individualized Modules, Development of Vocational Education Modules, Development of the Instructor's Manual, and Management Handbook. A slide-tape presentation was developed for curriculum writers and teachers to use as a basis for developing slides and tapes to supplement the modules. An 8-week workshop was conducted to develop individualized modules in the 10 areas. During the project approximately 500 modules were completed. Consultative services, workshops, and inservice training were provided to local school districts, area vocational schools, and institutions of higher learning. Modules developed were field tested in 20 schools in Kentucky. Appended to the report are copies of each of the four handbooks developed, a copy of the module evaluation form and of the field test observation record, and several workshop agendas. (JT)

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FINAL REPORT

Project No. V0100VZ
Grant No. OEG-0-74-1750

COMPETENCY-BASED CURRICULUM DEVELOPMENT
(Commissioner's Share Part C)

Herbert Bruce, Jr., Director
Curriculum Development Center
University of Kentucky
Lexington, Kentucky 40506

A Cooperative Effort
Through

The Bureau of Vocational Education
Frankfort, Kentucky 40601

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NATIONAL INSTITUTE OF EDUCATION

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July 1, 1974 - December 31, 1975

U.S. Department of Health, Education, and Welfare

Office of Education

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University of Kentucky
Lexington, Kentucky 40506

December 31, 1975

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Office of Education

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FINAL REPORT

COMPETENCY-BASED
CURRICULUM DEVELOPMENT PROJECT

PROJECT NO. V0100VZ

DESCRIPTION OF THE PROJECT

As one of the seven members of the Vocational-Technical Consortium of States (V-TECS), Kentucky was in the process of developing catalogs of performance objectives and criterion-referenced measures in vocational and technical education. The Curriculum Development Center, housed at the University of Kentucky, was given the responsibility of completing the catalogs in six vocational service areas identified as priority areas within the state. Based on a task analysis of the selected job, and validated by response from a sample of workers in the field, the development of these catalogs of performance objectives and criterion-referenced measures have been written.

The basic purpose of the present project was to translate the catalogs of performance objectives into viable programs of instruction, ready for implementation in the secondary and post-secondary training institutions of the state. It was the intent of this project to develop competency-based curriculum packages based on the V-TECS catalogs, field test the curriculum packages, and compare the resulting student outcomes with existing vocational programs. The objective to compare student outcomes using the individualized modules with students using existing vocational programs was changed to a procedure of field testing the modules to determine their usability. Ten priority vocational areas were identified, for which curriculum packages (or programs) were constructed; six from the Kentucky-developed catalogs, and four from catalogs developed by other V-TECS members. After the final decisions were made relative to the design of the total curriculum delivery system and the specific format of the competency-based materials, selected vocational personnel were trained to develop the packages and help produce implementation materials. Later stages of the project provide for personnel development to conduct the field testing of the materials, and then actually field testing the developed curriculum packages.

The first task was to complete the catalogs of performance objectives in the V-TECS format. The design of the curriculum delivery system was developed and adopted. Input for developing the delivery system was solicited from personnel within the State Department of Education, vocational teacher education in Kentucky, regional supervisory staff, and teachers.

OBJECTIVES

The original objectives were revised to read as follows:

1. To teach selected personnel to develop competency-based curriculum packages

2. To develop ten curriculum packages in the following areas:

   a. Auto Body
   b. Bank Teller
   c. Carpentry
   d. Cashier Checker
   e. Child Care
   f. Dental Assistant
   g. Food Preparation
   h. Machine Shop
   i. Secretarial
   j. Tractor Mechanic

3. To determine the usability of modules

PROCEDURES FOR ATTAINING THE OBJECTIVES

A. Copies of the catalogs of performance objectives and criterion-referenced measures developed by member states of V-TECS were obtained.

B. Catalogs developed outside the state of Kentucky were validated for employment opportunities in Kentucky by purposive sampling and a comparative analysis.

C. A model to follow in developing competency-based individualized modules was developed.

D. A committee of vocational-technical teachers and one technical content specialist was recruited for each of the priority areas. It was the responsibility of each committee working with the curriculum specialist and the program specialist to develop modules in their priority area. The teachers were selected on the basis of interest and competence as identified by the curriculum specialist and the program development personnel, State Department of Education. The technical content specialists were selected after consulting with teachers who had active craft committees from business and industry. The particular design of each curriculum package was determined before the committees were selected.

E. A five-day inservice meeting was conducted to orient the curriculum development committee to competency-based curriculum, outline the responsibilities of the committee, analyze the format of the curriculum package, and plan the activities of the committee. The curriculum specialist in the CDC and the program specialist in the State Department of Education coordinated these activities and conducted the inservice meeting.

F. The curriculum writers worked a total of eight weeks developing the curriculum packages. The curriculum specialist and the program specialist served as coordinators of this effort and provided assistance relative to curriculum design and organization. The technical content specialist provided assistance relative to technical content.

G. The curriculum specialist and the program specialist edited the curriculum packages and prepared them for printing. The media specialist and editor of the CDC also reviewed each package before they were duplicated.

H. Twenty sites were selected for field testing the curriculum packages.

I. A two-day orientation meeting was held with teachers participating in the field-test effort. The purpose of this meeting was to explain the project and plan for the field-testing procedures to be followed.

J. The curriculum packages were field tested for an ample period of time to allow one group of students to complete the entire package.

RESULTS

A model was developed to use in developing competency-based individualized modules. In order to develop appropriate materials, the selected personnel were taught to develop the individualized modules. Approximately 500 modules were developed in the 10 areas listed under the objectives.

Twenty schools were selected to field test the materials (two schools for each area). Following the completion of this activity the modules are to be revised in the spring of 1976 and demonstrated in schools the fall of 1976.

CONCLUSION AND RECOMMENDATIONS

As a result of this grant, curriculum development in Kentucky has been changed. Using competency-based individualized modules in vocational programs has become a reality. In the opinion of the writer, a system to develop this kind of material based on the V-TECS catalogs of objectives and criterion-referenced measures has been established. Therefore, the procedure established in this grant to develop and test curriculum materials should be continued in Kentucky.

MODEL FOR MODULARIZED COMPETENCY-BASED VOCATIONAL EDUCATION

The Curriculum Development Center and the Kentucky Bureau of Vocational Education have made a serious commitment to the idea that the concepts and practices of competency-based education can make a significant contribution to the improvement of vocational programs in the Commonwealth. One of the primary efforts in moving toward competency-based education (CBE) was to identify a broad model of CBE that describes the total program, and a specific model for an instructional delivery system. This must be done before instructional programs can be constructed and instructional materials developed. The effort to identify the models and determine their implementation has involved the direct professional work of a group of leaders within the CDC and the Bureau, and the active response of a great many educators across the region.

The model as described here is not presented as being unique, for the several elements can be found in somewhat similar forms in other emerging programs around the country. Rather, the model has been derived from a variety of sources and specifically redesigned to be particularly appropriate to the needs of vocational education in Kentucky. The model for competency-based curriculum development and instructional materials production suggests the following characteristics:

--Appealing enough in concept and appearance to attract the favorable attention of teachers and students who may be unfamiliar with CBE and skeptical of change.

--Flexible enough to permit development, modification, and refinement as suggested by experience in its implementation.

--Simple enough to be produced within severe time limitations and the restraints of not-unlimited resources.

MODEL OF COMPETENCY-BASED VOCATIONAL PROGRAM

The program was based on several fundamental concepts and assumptions:

--Occupational competency consists of a large number of individual skilled behaviors, applied singly or in combination by the practitioner.

--These skilled behaviors, or competencies, can be identified and can be learned.

--Vocational educators are capable of devising programs that will enable students to become competent in their occupational skills.

--Instructors can utilize relatively objective means to determine when the student has learned the requisite competencies.

The competency-based vocational program as conceived in idealized form consists of a series of learning experiences in which the student progresses from his level of skill at the time of entry (whatever that level may be) to final competence in the skills required of his chosen occupation or sub-occupation (Figure 1). Each learning experience (the materials for which are packaged in module form) requires successful completion and instructor-observed competent performance before a new experience is undertaken. Organization of the learning experiences is based on educational logic and on teaching/learning efficiency. The model at this stage of its development is basically linear in design, but it does not preclude later development to a branching form to suit individual student needs.

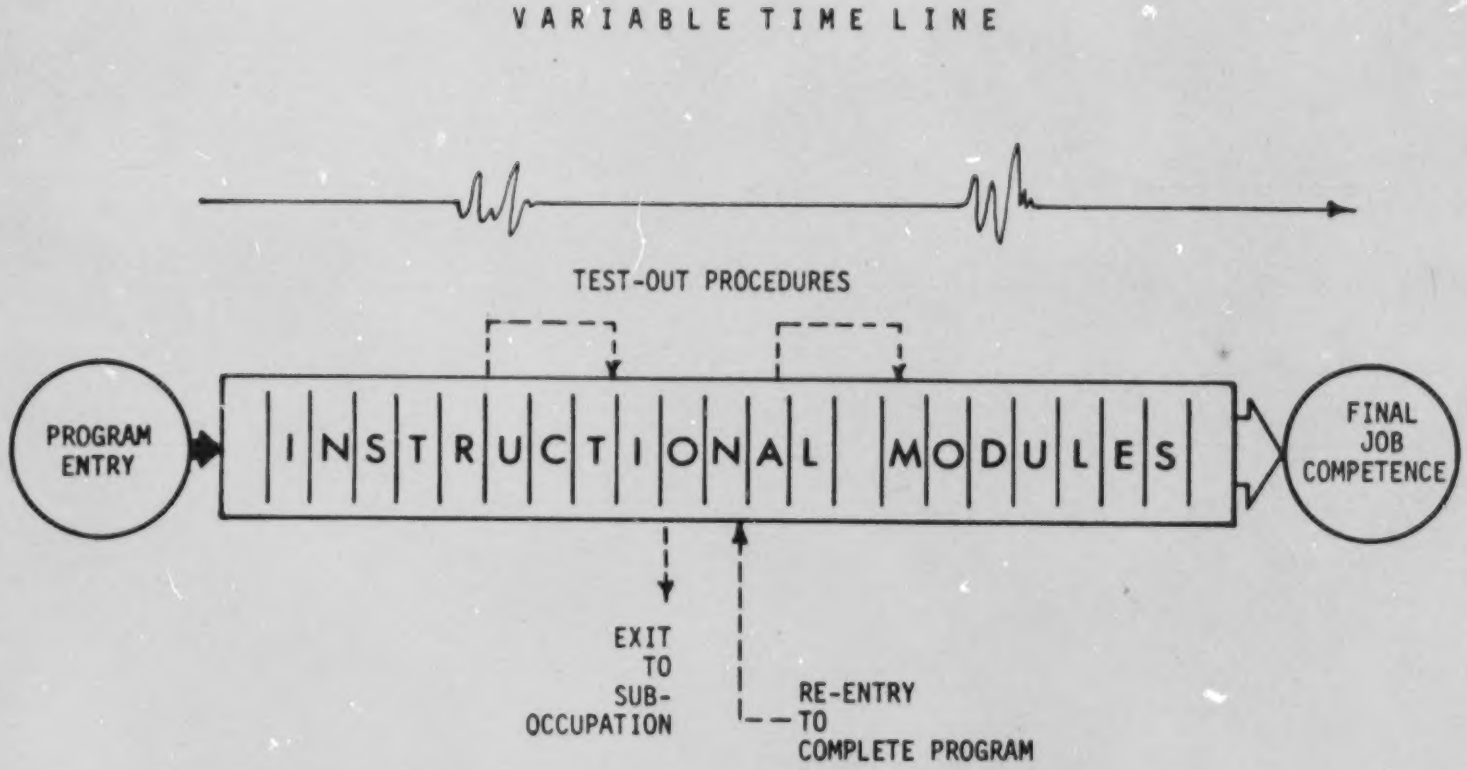
In the competency-based program the factor of time is a variable, while demonstrated occupational competence is a constant (within, of course, the constraints of school and program administration). This is in contrast to traditional education where, broadly speaking, the reverse is true. The model admits to the fact that there are many ways to learn, including not only the formal learning activities of schooling, but also learning done in other agencies and in general life experience. Thus the test-out procedures in the program allow the student to provide evidence of previously achieved competence.

Student exit from the program may be made at various points depending on the educational and occupational goals of the student. When the identified requisite competencies for a given sub-occupation have been acquired the student may leave to enter gainful employment. At a later time, the student may re-enter the program at the appropriate point and then continue to achieve higher level competencies. Final program completion is reached when the student has demonstrated occupational entry-level skill in all of the identified competencies.

COMPONENTS OF THE COMPETENCY-BASED DELIVERY SYSTEM

The Kentucky Model for competency-based vocational education was conceived as a system for the development and delivery of the instructional program--from identification of incumbent worker tasks, to student occupational competence. As opposed to a collection of discrete or fragmentary program-support materials, in this systematic approach each component supports the others, each is in turn affected in content by the requirements of others. All of the components were directed toward providing an instructional gestalt in which the teacher and student can work in the process of learning (Figure 2).

The instructional objectives for the Kentucky Model were derived from the V-TECS catalog of objectives. These objectives were directly related to the tasks that incumbent workers perform on the job. In turn, the criterion-referenced measures (or student performances of the task) were drawn directly from the objectives. This strong research-based linear relation of worker function to demonstrated student performance was considered to be one of the powers of the Kentucky Model.



MODEL OF COMPETENCY-BASED VOCATIONAL EDUCATION PROGRAM

Figure 1

-THE KENTUCKY MODEL-

COMPONENTS OF
THE COMPETENCY-BASED CURRICULUM
DELIVERY SYSTEM

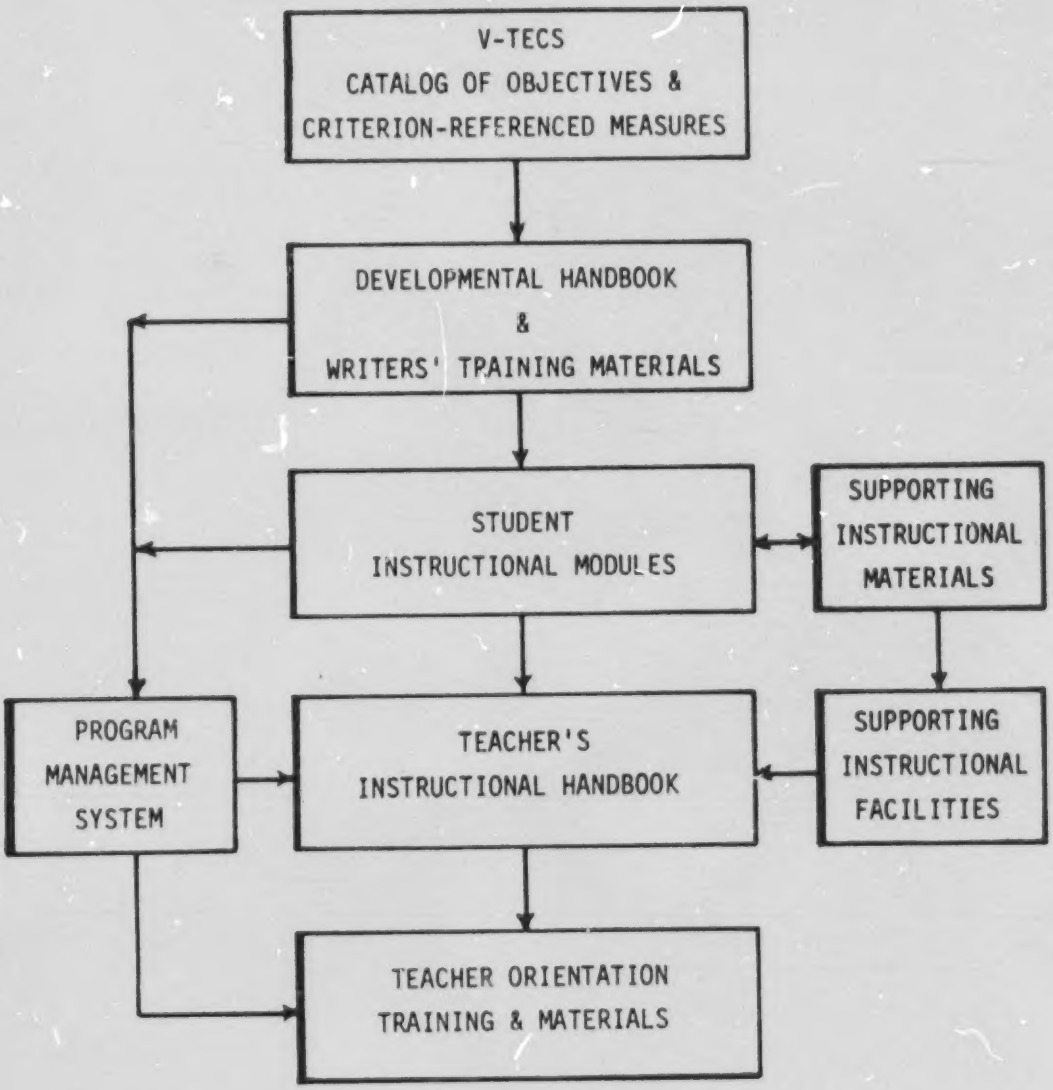


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Figure 2

The developmental handbook was designed to assist curriculum writers develop the instructional program from the objectives. In the handbook the various components of the delivery system were described and their relationship to each other explained. In particular, instructions and suggestions were given for the development of effective student instructional packages (called modules). The handbook thus provides guidelines for a unified approach to competency-based curriculum materials.

Student instructional modules are the core of the delivery system. Developed and written specifically for student use, the module presents the instructional objective along with the learning activities designed to enable the student to reach that objective. It also provides evaluation devices and measures to determine when the objective has in fact been reached. As a vehicle for individualized instruction, the module moves the student through a series of learning experiences and learned occupational competencies toward final program completion and job entry. While each module deals with a single competency or a small cluster of related competencies, the total group of modules constitute a coherent vocational program.

Supporting instructional materials were used by student and teacher while working within the modularized program. These materials support the instructional module, provide basic subject matter content, augment and enrich the program, provide alternative paths to learning, and utilize varied stimuli to promote learning. Supporting materials may include books, reference material, audio and video tapes, illustrations, pamphlets, slides and films, laboratory equipment, or special supplies. Each of these was selected and incorporated into the program specifically to aid the student in completing the module successfully, and thus acquiring the requisite occupational competence.

The supporting instructional facilities promote learning through laboratory activities and cognitive study. Work space and the appropriate environmental conditions are facilities needed for the laboratory experiences involved in the modules. In addition, the cognitive or knowledge component of the module requires that facilities be made available for student study. It was proposed that learning centers may be set up either as areas within the classroom space, or a separate centers within the school, including enough facilities to serve several vocational programs. The learning center will contain not only the supporting instructional materials themselves, but the necessary hardware such as slide-tape viewers, tape players, and carrel space.

The program management system was devised to enable the teacher to organize the program, manage its day-to-day operation, maintain the student records essential to competency-based education, and aid in efficient program administration. Because individualized, modularized, competency-based education is not usually a part of the teachers' experiential background, a functional management system is crucial to the installation and success of the model delivery system.

The teachers' instructional handbook was used as a constant reference in the teachers' efforts to implement the model program and promote student learning. It includes a copy of the student instructional modules, a sequential list of modules for the major occupation and sub-occupations, a listing of hardware and software required for each module, final assessment instruments, instructional notes for each of the modules, and details of the program management system. It can also suggest to the teacher alternative student learning experiences, and appropriate affective objectives which the teacher may seek to promote.

Teacher orientation was an integral part of the model, certainly in the early stages of its installation. All of the components of the total delivery system were incorporated in the orientation procedures, and the modes of orientation may include readings, personal competency-based learning experience, and intensive workshops.

THE INDIVIDUAL STUDY MODULE

In the Kentucky Model for competency-based vocational education, instruction was modularized. A model is a set of learning activities designed to facilitate the student's acquisition and demonstration of a particular occupational competence. Organizing the instructional program in module form increases the possibilities for student self-pacing and individualization. It also promotes accurate aim toward specific competencies and incorporates relatively objective evaluation of successful performance.

The instructional module encompasses the learning of a single identified objective or a small group of related objectives that can be learned effectively together. All of the activities outlined in the module were directed toward achievement of the stated objective, and progress toward subsequent objectives is dependent upon the student's demonstration of the objective competence. Basically linear in instructional design, there is, however, provision for individualized learning activity options and for by-passing the learning activities by students who have acquired the designated competence through previous experience.

The three domains of learning were accommodated in this model of modularized instruction. Most of the stated objectives included a cognitive element and a psychomotor element, the balance and importance of each element varying with the objective. Though it may be unstated in the language of the objective, the cognitive knowledge of facts, theories, data, and procedures is usually essential to the successful performance of the psychomotor task. Provision for the student to acquire the essential knowledge and to develop the required degree of skill was explicitly designed into the learning activities of the module. Many objectives may have either an intrinsic or implied affective element, though in this model the affective element did not appear in the module objective statement. Opportunity for affective development is possible through special teacher-provided experiences and through the manipulation of the learning environment.

As in the model of the instructional delivery system, the model for the instructional module consists of a number of components, each supporting and contributing to the strength of the whole. Each component was meant to serve a specific purpose and satisfy a particular requirement of the competency-based vocational concept. Because they form a rationally constructed framework for teaching and learning, a member component cannot be removed or substantially modified without seriously affecting the strength of the entire structure. While the individual module was intended to be used as an instructional entity, the manner in which the instructional materials were packaged permits the instructor to enrich the learning experiences, update the content, and modify the instructional mode to meet the needs of individual learners.

The instructional module was to be put directly into the hands of the secondary or post-secondary student, and was meant for his or her personal use. As such, the reading level, the psychological approach, the types of learning activities, and the evaluation techniques must be geared to the target student. Real student needs, motivations, and abilities take precedence over teaching convenience or education traditions. In the paragraphs that follow the particular components of the model module are described.

The rationale is a brief statement to the student of what he is about to learn, how this relates to his previous learning and to his future learning. It is designed to afford some motivation for the student and to emphasize the particular importance of the competence he is being asked to acquire.

The performance objective, or objectives, of the module were taken directly from the V-TECS catalog of objectives for the subject occupation, without change. The performance goals were specified in rigorous detail in advance of learning, and the student is held accountable for attaining a given level of competency in performing the essential tasks of the occupation.

The learning activities were specified by the module developer and were organized to enable the student to achieve the module objectives. The activities will include experiences for acquiring cognitive knowledge and understanding, and for skills development. Additionally, by purposeful selection and judicious application, they cannot only aid student achievement of the stated performance objectives, but may help promote the affective goals the teacher has for the student. The activity forms may be varied to maintain student interest and devised so as to be suitable for the expected student abilities and learning styles. The learning activities, while not precluding traditional group instruction or teacher-dominated modes of learning, will be largely self-instructional and individual. The extent and balance of individual and group learning effort is dependent on the needs and instructional problems of the particular occupational area.

The learning activity options satisfy several aspects of competency-based education. One of the basic tenets of individualized instruction is that there are many paths to learning, each valid as long as it leads to student competence. The optional and alternative activities serve to meet the requirements of students' personal learning styles and identified needs for personal growth and development. They also provide various stimuli to encourage learning and maintain active interest. The learning activity options may be included in the module by the module developer, may be added to the module by the classroom instructor, or may even be devised by the student himself in his effort to achieve the objective.

Feedback, or knowledge of results, is an important part of the learning process. The Kentucky Model makes provision for student feedback by including self-tests of knowledge and checklists for performance rating. These progress checks may come during or at the completion of the learning activities. Students who find that they need more knowledge or a higher level of skill may recycle through one or more of the learning activities.

Attitudinal experiences related to the performance objectives of the module may be either group or individual experiences, and for the most part will be created and implemented by the classroom instructor. Appropriate attitudinal concerns of such experiences are student attitude toward work, internalization of group values, personality development, personal expectations of the occupation, and human relations.

Final assessment procedures are particularly crucial to the fulfillment of the concept of performance-based education. Final assessment in the Kentucky Model was based on the criterion-referenced measures of the V-TECS catalog and is therefore considered an objective and a valid measure of task competence. The Model procedures also meet the requirements of being rigorous in detail, specifying the level of performance and conditions of evaluation, and made public in advance.

The student who has acquired the necessary skill outside of the modularized program may elect to demonstrate his competence by going through the final assessment without completing any or all of the learning activities. Any student who is not completely successful in the assessment procedures may improve his knowledge and/or skills by recycling through some learning activities or selecting learning activity options. For all students, final acceptable performance is required before the student may go on to further learnings in subsequent modules. See Figure 3 for the sequential development of the module.

-THE KENTUCKY MODEL-

THE INSTRUCTIONAL MODULE -- SEQUENTIAL DEVELOPMENT

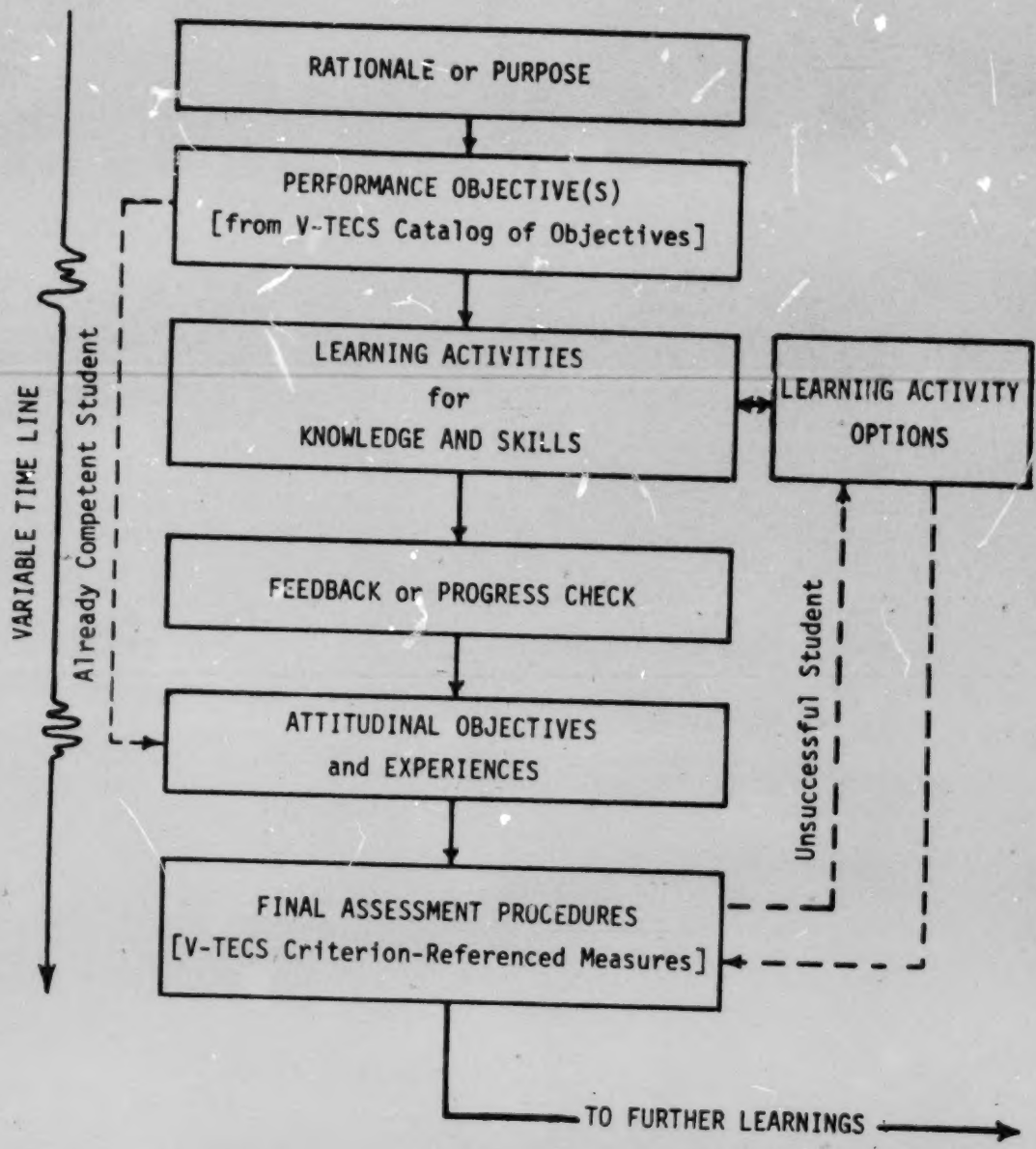

Figure 3

PRESENTATION AND REVISION OF THE MODEL

A number of revisions and refinements were made to the prototype instructional module as a result of reaction and input from many individuals and groups. This input was the product of 24 formal presentations made to vocational leaders around the state in which the model was presented and verbal discussion and written comments were elicited. Though many of the participants were being asked to consider competency-based education for the first time, their reaction to the concepts and the materials were essentially positive, helpful, and enthusiastic.

There was little basic resistance or objection to the theoretical basis of competency-based education. The model was perceived as being well organized and thoroughly prepared, and no fundamental deficiencies were revealed. The reservations and anxieties expressed by the participants centered to a great extent around management problems and student acceptance of CBE. The reading level of the sample module was thought to be too high, and the supposed reliance of modular materials on reading was perceived to be a barrier to learning for many students. Problems related to classroom management, traditional school administration, and awarding of grades and credits were topics of concern. Doubts were expressed, particularly by teacher educators, that CBE could adequately provide for the affective component of education. To some teachers, the notion of a program based on demonstrated competency rather than on accumulated time seemed to threaten their control of the teaching situation.

All of these responses were evaluated, along with further modifications suggested by the CDC staff's own rethinking of the problem. The following refinements were among those made to the revised module:

--The sentence structure and vocabulary have been reviewed and made simpler where possible, and educational jargon has been largely eliminated. This will also be carried through to the instruction sheets and supporting materials.

--The front page has been reorganized, with the Introduction, Directions, and Objectives being placed in that more logical order.

--The format for the objectives has been given greater clarity.

--The Learning Activities section has been revised to permit optional or alternative learning activities to be readily added by the instructor.

--The "Final Assessment" has been retitled "Check-Out Activities" to be more understandable to students.

--Typographically, the module number has been replaced for easy filing, the CDC logo added, and type and symbols have been somewhat refined and unified.

--Other suggestions, such as instructions to the teacher for alternative activities and affective objectives, will be incorporated in the teacher's handbook.

A sample of the revised module format is in the Handbook for the Development of Vocational Education Modules (Appendix A).

FIELD TEST PLANS

The direction of the project has changed from being one devoted to producing a limited project in a defined period of time to being the formative stage of a long-term curriculum development project throughout the state. This obviously changed the needs and focus of the field test procedure.

1. Formative testing for the general purpose of module revision and program development was the revised goal. Criterion-referenced evaluation is the appropriate method of achieving this goal.

2. The purposes of field testing were to:

   a. Identify deficiencies in module learning activities and evaluative procedures.

   b. Identify module teaching techniques and materials that prove particularly effective.

   c. Identify needs for additional mediation.

   d. Identify individualized-program management problems.

   e. Determine whether module is suitable for individualized instruction.

   f. Identify technical errors.

   g. Make preliminary assessment of the module's effectiveness in changing student behavior.

   h. Gather data on the time required by students to complete modules.

   i. Make preliminary estimate of the module's acceptance by teachers and students, and the need for changes.

   j. Continue the awareness program for CBE through the field test of modules.

3. The following general procedures were utilized:

   a. Each of the 10 modularized programs were field tested in at least two sites.

   b. In order to get as much information as possible, the sites and teachers to be selected were given optimal conditions for the implementation and evaluation of the programs. It is not the intention at this stage in the module development process to try out the materials in a cross-section of schools.

   c. Teachers from the module writing teams were selected to serve as field-test teachers whenever appropriate. Other skilled teachers were also utilized.

   d. Field-test sites were constantly monitored by program co-directors and project managers. They administered evaluation instruments, helped solve instructional problems, and observed the work of the class.

   e. Teachers and students were asked to complete evaluation instruments on individual modules as well as the total CBE program.

   f. Input from the field test of the experimental edition of the modules were utilized for module revision. No program was adjudged non-function solely on the basis of the field test or the reaction of an individual teacher.

   g. The initial field test began in the fall semester, 1975. The length of the field test varied according to the type of program and the number of instructional modules available.

FIELD TEST FORMS

To gather information relating to the field test three basic forms were developed to include (1) Competency Evaluation and Completion Record, (2) Module Evaluation Form, and (3) Field Test Observation Record. The competency evaluation form was used by the teachers in the field test situations as a record of the completion rate, level, and time relating to each objective by each student. The module evaluation form was used by the field test teachers to evaluate each individual module. One form was completed by each field test teacher for each module completed. The field test observation record was used by project monitor personnel as they visited the field test sites. Each time a visit was made an observation form was completed relating to the visit. (See Appendix B for examples of the forms.)

FIELD TEST RESULTS

A summary of the results will be presented based on an analysis of the forms completed. The actual evaluation of the data and the reported results will be highly subjective since no controlled experimental design was conducted. The results are as follows:

1. The format of the module to include introduction, directions, objectives, learning activities, and check-out activities in a folder type package is well liked and usable by students and teachers.

2. The introduction to the module is very helpful but needs to be kept very brief.

3. The objectives based on the V-TECS catalogs are in most instances well written and easy to understand.

4. The learning activities are geared too much to reading especially for those students with poor reading skills.

5. More slide/tapes, cassettes, and other media should be included in the learning activities.

6. The student self-checks are helpful to students especially in terms of reinforcement. Students had difficulty however in completing the self-check, then looking at the answers. In many instances the reverse was true.

7. The instructor's final checklist was very helpful to the teacher and it insured that the instructor evaluated those aspects most important.

8. The majority of the students liked working on the modules.

9. Teachers perceived the modules as an improvement and enjoyed using them.

10. The maximum number of objectives that should be included in a module in most cases is three or less. When the number exceeds three the module completion time is too long and student boredom results due to lack of reinforcement.

11. The time for completion of a particular occupational area using the modules is about the same as the time needed in regular programs. In some instances completion time with modules may be less.

12. The majority of the students check-out on the module during the first attempt. A limited number had to be recycled through the modules.

13. The amount of teacher effort required using the modularized approach was increased. However, the rewards from teaching were perceived as being greater.

Further research is planned during the demonstration and diffusion phases of the curriculum development process. The focus at that time will be on construct validity, determined by empirical means. A process-product study will be designed to measure and compare the occupational performance of module-using students with students from classes using traditional group instruction in a time-based program. Such studies call for elaborate control techniques and sophisticated statistical analysis, beyond the scope of the present project. Longitudinal studies of vocational students on the job would also be helpful. To subject the unrefined experimental edition of the modules to process-product experimental design would be futile in terms of obtaining usable results, and unfair in terms of assessing the potential contribution of CBE to vocational education.

Figure 4 gives a summary of the CBE Model design and developmental procedure that was followed.

SUMMARY

In an attempt to meet the three objectives of the project and implement the competency-based curriculum concept in Kentucky, the following things have been done:

1. Developed Domain Study, State-of-the-Art, Task Booklet, Field Review Catalog, and Final Catalog of Objectives and Criterion-Referenced Measures in:

   a. Carpentry
   b. Bank Teller
   c. Child Care Worker
   d. Tractor Mechanic
   e. Cashier-Checker
   f. Dental Auxiliary

2. Developed four Handbooks (See Appendix A)

   a. Development of Kentucky's Model for Individualized Modules
   b. Development of Vocational Education Modules
   c. Development of the Instructor's Manual
   d. Management Handbook (CDC Working Document)

3. Prepared a Slide-Tape Presentation for curriculum writers and teachers to use as a basis for developing slides and tapes to supplement the modules. In addition, approximately 700 illustrations have been prepared to support the written materials.

CBE MODULE DESIGN AND DEVELOPMENT

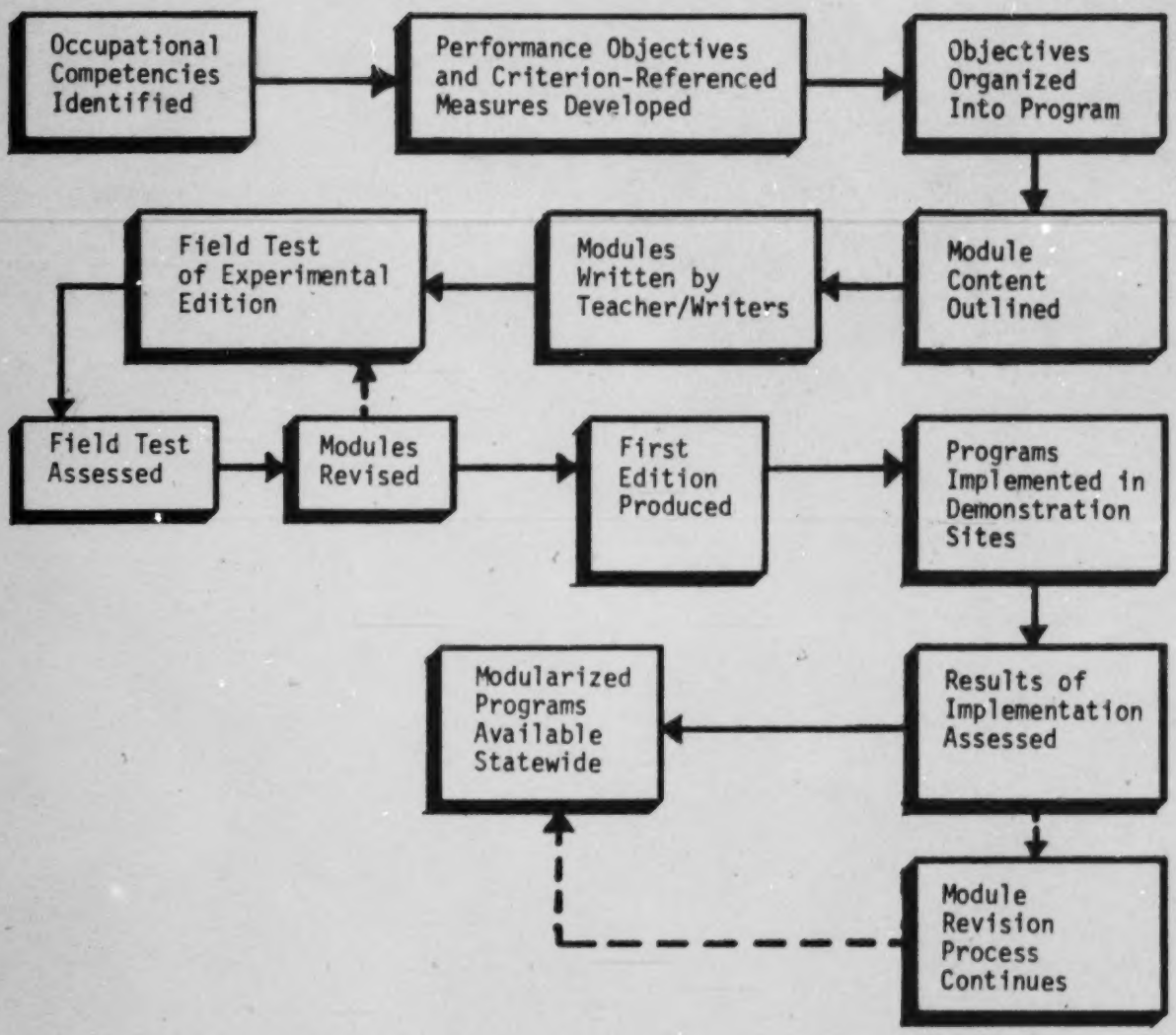

Figure 4

4. Conducted an eight-week workshop (See Appendix C) to develop individualized modules in ten vocational areas:

   a. Carpenter
   b. Bank Teller
   c. Child Care Worker
   d. Tractor Mechanic
   e. Cashier-Checker
   f. Dental Auxiliary
   *g. Stenographer
   **h. Machinist
   i. Auto Body Repairman
   j. Food Preparation Worker

   During this project approximately 500 modules were completed. (See Appendix D for samples of modules.) This effort has involved the hard work and cooperation of many people:

   a. 55 vocational teachers and technical specialists
   b. CDC specialists
   c. PDD program supervisors
   d. Teacher educators
   e. People from business and industry

5. Consultative services, workshops and inservice training were provided to local school districts, area vocational schools and institutions of higher learning.

6. Field tested the modules developed in twenty schools in Kentucky.

*Dr. Kenneth Carter, Northern Kentucky State College, was responsible for developing materials in this area.
**Dr. Paul Lyons, Murray State University, was responsible for developing materials in this area.

APPENDIX A

CURRICULUM DEVELOPMENT CENTER
VOCATIONAL EDUCATION
UNIVERSITY OF KENTUCKY
LEXINGTON, KY. 40506

DEVELOPMENT OF THE KENTUCKY MODEL FOR MODULARIZED COMPETENCY-BASED VOCATIONAL EDUCATION

CBE

DEVELOPMENT OF THE KENTUCKY MODEL FOR MODULARIZED COMPETENCY-BASED VOCATIONAL EDUCATION

Glen E. Fardig
Curriculum Development Center for Kentucky

The Curriculum Development Center for Kentucky
The University of Kentucky
151 Taylor Education Building
Lexington, Kentucky 40506

February, 1975

A FINAL REPORT

ON A PROJECT CONDUCTED UNDER

PROJECT NO. V28816-01

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Foreword

Vocational education has shared in the recent great upsurge of interest in competency-based education--an approach to instruction that holds great promise for increasing student learning and occupational success and for improving instructional efficiency. The Curriculum Development Center for Kentucky has been working to fulfill the promise of competency-based education, first in cooperatively producing validated lists of occupational competencies in a number of areas, and now in developing modularized programs built on the identified competencies. This report is part of an ongoing effort whose present goal is the production of instructional packages for twelve competency-based secondary and post-secondary vocational programs.

The report outlines the underlying philosophical bases on which the functional programs are to be developed. It also presents a model of the proposed instructional system and a model of the individualized instructional module which is to be used in the curriculum development project. This format provides the framework on which all the materials will be constructed. Originally written for the purposes of this project, it is hoped that this report may also be of benefit to those who are contemplating launching their own efforts in competency-based education.

Recognition should be given to the many people who have assisted in the module's developmental process. The Competency-Based Education Committee, composed of concerned individuals in the Curriculum Development Center, the Program Development Division, and other personnel in the Bureau of Vocational Education, has provided strong leadership and much personal effort in promoting this curriculum development program. School administrators, vocational supervisors, curriculum personnel, and teachers across the state have contributed their reactions to the proposed model. With the continued interest and cooperation of these professional educators, the prospects for the improvement of instruction through competency-based education look bright indeed.

Herbert Bruce
Director
The Curriculum Development
Center for Kentucky

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Introduction

The University of Kentucky Curriculum Development Center and the Kentucky Bureau of Vocational Education have made a serious commitment to the idea that the concepts and practices of competency-based education can make a significant contribution to the improvement of vocational programs in the Commonwealth. One of the primary efforts in moving toward competency-based education (CBE) has been to identify a broad model of CBE that describes the total program and also to identify a specific model for an instructional delivery system. This must be done before instructional programs can be constructed and instructional materials developed. The effort to identify the models and determine their implementation has involved the direct professional work of a group of leaders within the C D C and the Bureau and the active response of a great many educators across the region.

The models as described here are not presented as being unique, for the several elements can be found in somewhat similar forms in other emerging programs around the country. Rather, the models have been derived from a variety of sources and specifically redesigned to be particularly appropriate to the needs of vocational education in Kentucky. The model for competency-based curriculum development and instructional materials production suggests the following characteristics. It should be:

- appealing enough in concept and appearance to attract the favorable attention of teachers and students who may be unfamiliar with CBE and skeptical of change.

- flexible enough to permit development, modification, and refinement as suggested by experience in its implementation.
- simple enough to be produced within severe time limitations and the restraints of not-unlimited resources.
- adaptable enough to be used for all occupational areas of vocational education.

Model of Competency-Based Vocational Program

The program model is based on several fundamental concepts and assumptions:

- Occupational competence consists of a large number of individual skilled behaviors, applied singly or in combination by the practitioner.
- These skilled behaviors, or competencies, can be identified and can be learned.
- Vocational educators are capable of devising programs that will enable students to become competent in the skills of their chosen occupation.
- Instructors can utilize relatively objective means to determine when the student has learned the requisite competencies.

In the development of the model, the following working definition of competency-based education has been accepted. Competency-based vocational education programs are programs in which performance goals are specified, and agreed to, in rigorous detail in advance of instruction. The student is held accountable, not for achieving passing grades but for attaining a given level of competency in performing the essential tasks of the occupation. The term "competence" does not refer solely to specific skills and knowledge, but may also include more complex abilities such as being able to think logically, organize work, and appreciate workmanship.

The foregoing statements imply that:

- Instruction must be individualized to a great extent.
- The emphasis in on exit rather than entrance requirements.

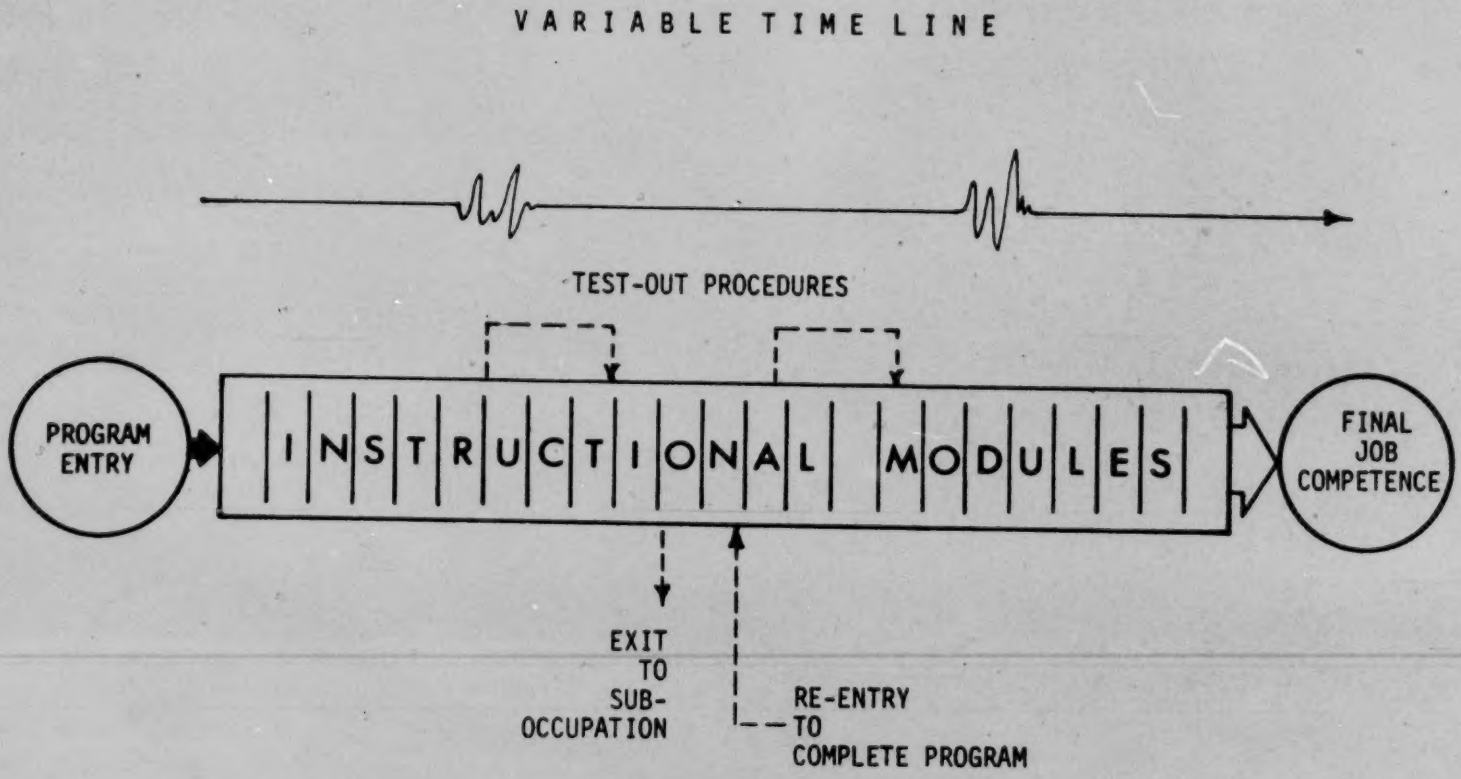
- The student is considered to have completed the program only when he has demonstrated the required level of competency.

The competency-based vocational program, as conceived in idealized form, consists a series of learning experiences in which the student progresses from his level of skill at the time of entry (whatever that level may be) to final competence in the skills required of his chosen occupation or sub-occupation. (Figure 1). Each learning experience (the materials for which are packaged in module form) requires successful completion and instructor-observed competent performance before a new experience is undertaken. Organization of the learning experience is based on educational logic and on teaching/learning efficiency. The model at this stage of its development is basically linear in design, but it does not preclude later development to a branching form to suit individual student needs.

In the competency-based program the factor of time is a variable, while demonstrated occupational competence is a constant (within, of course, the constraints of school and program administration). This is in contrast to traditional education where, broadly speaking, the reverse is true. The model admits to the fact that there are many ways to learn, including not only the formal learning activities of schooling but also learning done in other agencies and in general life experience. Thus the test-out procedures in the program allow the student to provide evidence of previously achieved competence.

Student exit from the program may be made at various points depending on the educational and occupational goals of the student. When the identified requisite competencies for a given sub-occupation have been acquired, the student may leave to enter gainful employment.

At a later time, the student may re-enter the program at the appropriate point and then continue to achieve higher level competencies. Final program completion is reached when the student has demonstrated occupational entry-level skill in all of the identified competencies.



MODEL OF COMPETENCY-BASED VOCATIONAL EDUCATION PROGRAM

Figure 1

Components of the Competency-Based Delivery System

The Kentucky Model for competency-based vocational education is conceived as a system for the development and delivery of the instructional program--from identification of incumbent worker tasks to student occupational competence. As opposed to a collection of discrete or fragmentary program-support materials, in this systematic approach each component supports the others, and each in turn is affected in content by the requirements of others. All of the components are directed toward providing an instructional gestalt in which the teacher and student can work in the process of learning. (Figure 2)

The instructional objectives for the Kentucky Model are derived from the catalogs of objectives developed by the Vocational-Technical Education Consortium of States (V-TECS). These objectives are directly related to the tasks that incumbent workers perform on the job. In turn, the criterion-referenced measures (or student performances of the task) are drawn directly from the objectives. This strong research-based linear relation of worker function to demonstrated student performance is considered to be one of the powers of the Kentucky Model.

The developmental handbook is designed to assist curriculum writers develop the instructional program from the objectives. In the handbook the various components of the delivery system are

described and their relationship to each other explained. In particular, instructions and suggestions are given for the development of effective student instructional packages (called modules). The handbook thus provides guidelines for a unified approach to competency-based curriculum materials.

Student instructional modules are the core of the delivery system. Developed and written specifically for student use, the module presents the instructional objective along with the learning activities designed to enable the student to reach that objective. It also provides evaluation devices and measures to determine when the objective has in fact been reached. As a vehicle for individualized instruction, the module moves the student through a series of learning experiences and learned occupational competencies toward final program completion and job entry. While each module deals with a single competency or a small cluster of related competencies, the total group of modules constitute a coherent vocational program.

Supporting instructional materials are used by student and teacher while working within the modularized program. These materials support the instructional module, provide basic subject matter content, augment and enrich the program, provide alternative paths to learning, and utilize varied stimuli to promote learning. Supporting materials may include books, reference material, audio and video tapes, illustrations, pamphlets, slides and films, laboratory equipment, or special supplies. Each of these is selected and incorporated into the program specifically to aid the student in completing the module successfully, thus acquiring the requisite occupational competence.

The supporting instructional facilities promote learning through laboratory activities and cognitive study. Work space and the appropriate environmental conditions are facilities needed for the laboratory experiences involved in the modules. In addition, the cognitive or knowledge component of the module requires that facilities be made available for student study. It is proposed that learning centers may be set up either as areas within the classroom space or as separate centers within the school, including enough facilities to serve several vocational programs. The learning center will contain not only the supporting instructional materials themselves but also the necessary hardware such as slide-tape viewers, tape players, and carrel space.

The program management system is devised to enable the teacher to organize the program, manage its day-to-day operation, maintain the student records essential to competency-based education, and aid in efficient program administration. Because individualized, modularized, competency-based education is not usually a part of the teacher's experiential background, a functional management system is crucial to the installation and success of the model delivery system.

The teacher's instructional handbook is used as a constant reference in the teacher's efforts to implement the model program and promote student learning. It includes a copy of the student instructional modules, a sequential list of modules for the major occupation and sub-occupations, a listing of hardware and software required for each module, final assessment instruments, instructional notes for

e h of the modules, and details of the program management system. It can also suggest to the teacher alternative student learning experiences, and appropriate affective objectives which the teacher may seek to promote.

Teacher orientation is an integral part of the model, certainly in the early stages of its installation. All of the components of the total delivery system are incorporated in the orientation procedures, and the modes of orientation may include readings, personal competency-based learning experience, and intensive workshops.

-THE KENTUCKY MODEL-

COMPONENTS OF
THE COMPETENCY-BASED CURRICULUM
DELIVERY SYSTEM

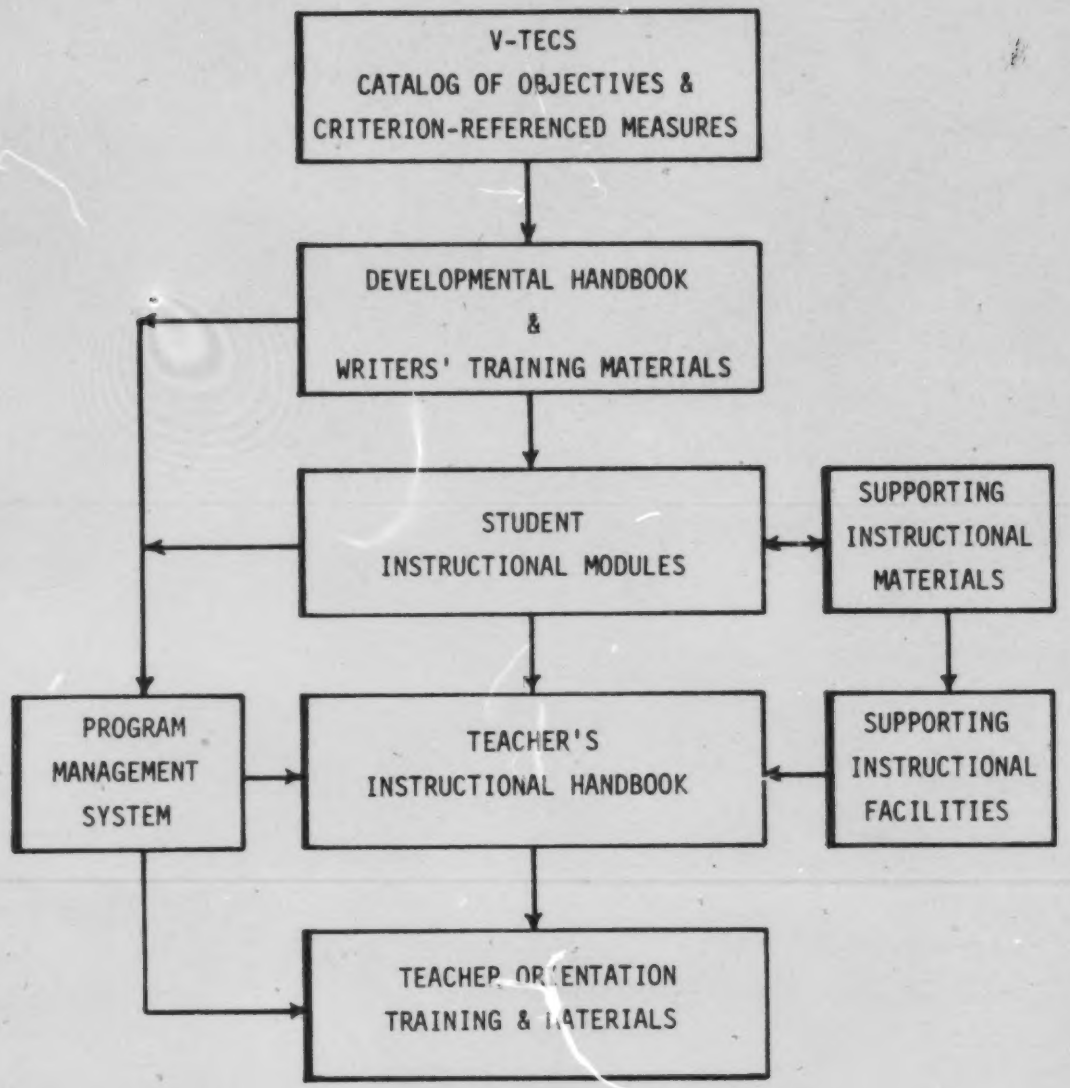


Figure 2

The Individual Study Module

In the Kentucky Model for competency-based vocational education, instruction is modularized. A module is a set of learning activities designed to facilitate the student's acquisition and demonstration of a particular occupational competence. Organizing the instructional program in module form increases the possibilities for student self-pacing and individualization. It also promotes accurate aim toward specific competencies and incorporates relatively objective evaluation of successful performance.

The instructional module encompasses the learning of a single identified objective or a small group of related objectives that can be learned effectively together. All of the activities outlined in the module are directed toward achievement of the stated objective, and progress toward subsequent objectives is dependent upon the student's demonstration of the objective competence. Basically linear in instructional design, there is, however, provision for individualized learning activity options and for by-passing the learning activities by students who have acquired the designated competence through previous experience.

The three domains of learning are accommodated in this model of modularized instruction. Most of the stated objectives will include a cognitive element and a psychomoter element, the balance and importance of each element varying with the objective. Though it may be unstated

in the language of the objective, the cognitive knowledge of facts, theories, data, and procedures is usually essential to the successful performance of the psychomoter task. Provision for the student to acquire the essential knowledge and to develop the required degree of skill is explicitly designed into the learning activities of the module. Many objectives may have either an intrinsic or implied affective element, though in this model the affective element will not appear in the module objective statement. Opportunity for affective development is possible through special teacher-provided experiences and through the manipulation of the learning environment.

As in the model of the instructional delivery system, the model for the instructional module consists of a number of components, each supporting and contributing to the strength of the whole. Each component is meant to serve a specific purpose and satisfy a particular requirement of the competency-based vocational concept. Because they form a rationally constructed framework for teaching and learning, a member component cannot be removed or substantially modified without seriously affecting the strength of the entire structure. While the individual module is intended to be used as an instructional entity, the manner in which the instructional materials are packaged permits the instructor to enrich the learning experiences, update the content, and modify the instructional mode to meet the needs of individual learners.

The instructional module is to be put directly into the hands of the secondary or post-secondary student, and is meant for his or her personal use. As such, the reading level, the psychological approach,

the types of learning activities, and the evaluation techniques must be geared to the target student. Real student needs, motivations, and abilities take precedence over teaching convenience or education traditions. In the paragraphs that follow, the particular components of the model module are described.

The rationale is a brief statement to the student of what he is about to learn, how this relates to his previous learning and to his future learning. It is designed to afford some motivation for the student and to emphasize the particular importance of the competence he is being asked to acquire.

The performance objective, or objectives, of the module are taken directly from the V-TECS catalog of objectives for the subject occupation, without change. The performance goals are specified in rigorous detail in advance of learning, and the student is held accountable for attaining a given level of competency in performing the essential tasks of the occupation.

The learning activities are specified by the module developer and are organized to enable the student to achieve the module objectives. The activities will include experiences for acquiring cognitive knowledge and understanding and for skills development. Additionally, by purposeful selection and judicious application, they can not only aid student achievement of the stated performance objectives, but may help promote the affective goals the teacher has for the student. The forms of the activities may be varied to maintain student interest and devised so as to be suitable for the expected student abilities and

learning styles. The learning activities, while not precluding traditional group instruction or teacher-dominated modes of learning, will be largely self-instructional and individual. The extent and balance of individual and group learning effort is dependent on the needs and instructional problems of the particular occupational area.

The learning activity options satisfy several aspects of competency-based education. One of the basic tenets of individualized instruction is that there are many paths to learning, each valid as long as it leads to student competence. The optional and alternative activities serve to meet the requirements of students' personal learning styles and identified needs for personal growth and development. They also provide varied stimuli to encourage learning and maintain active interest. The learning activity options may be included in the module by the module developer, may be added to the module by the classroom instructor, or may even be devised by the student himself in his effort to achieve the objective.

Feedback, or knowledge of results, is an important part of the learning process. The Kentucky Model makes provision for student feedback by including self-tests of knowledge and checklists for performance rating. These progress checks may come during or at the completion of the learning activities. Students who find that they need more knowledge or a higher level of skill may recycle through one or more of the learning activities.

Attitudinal experiences related to the performance objectives of the module may be either group or individual experiences and, for the most part, will be created and implemented by the classroom instructor.

Appropriate attitudinal concerns of such experiences are student attitude toward work, internalization of group values, personality development, personal expectations of the occupation, and human relations.

Final assessment procedures are particularly crucial to the fulfillment of the concept of competency-based education. Final assessments of competence in the Kentucky Model are based on the criterion-referenced measures of the V-TECS catalogs and are, therefore, considered objective and valid measures of task competence. The Model procedures also meet the requirements of being rigorous in detail, specifying the level of performance and conditions of evaluation, and made public in advance.

The student who has acquired the necessary skill outside of the modularized program may elect to demonstrate his competence by going through the final assessment without completing any or all of the learning activities. Any student who is not completely successful in the assessment procedures may improve his knowledge and/or skills by recycling through some learning activities or selecting learning activity options. For all students, final acceptable performance is required before the student may go on to further learnings in subsequent modules.

-THE KENTUCKY MODEL-

THE INSTRUCTIONAL MODULE -- SEQUENTIAL DEVELOPMENT

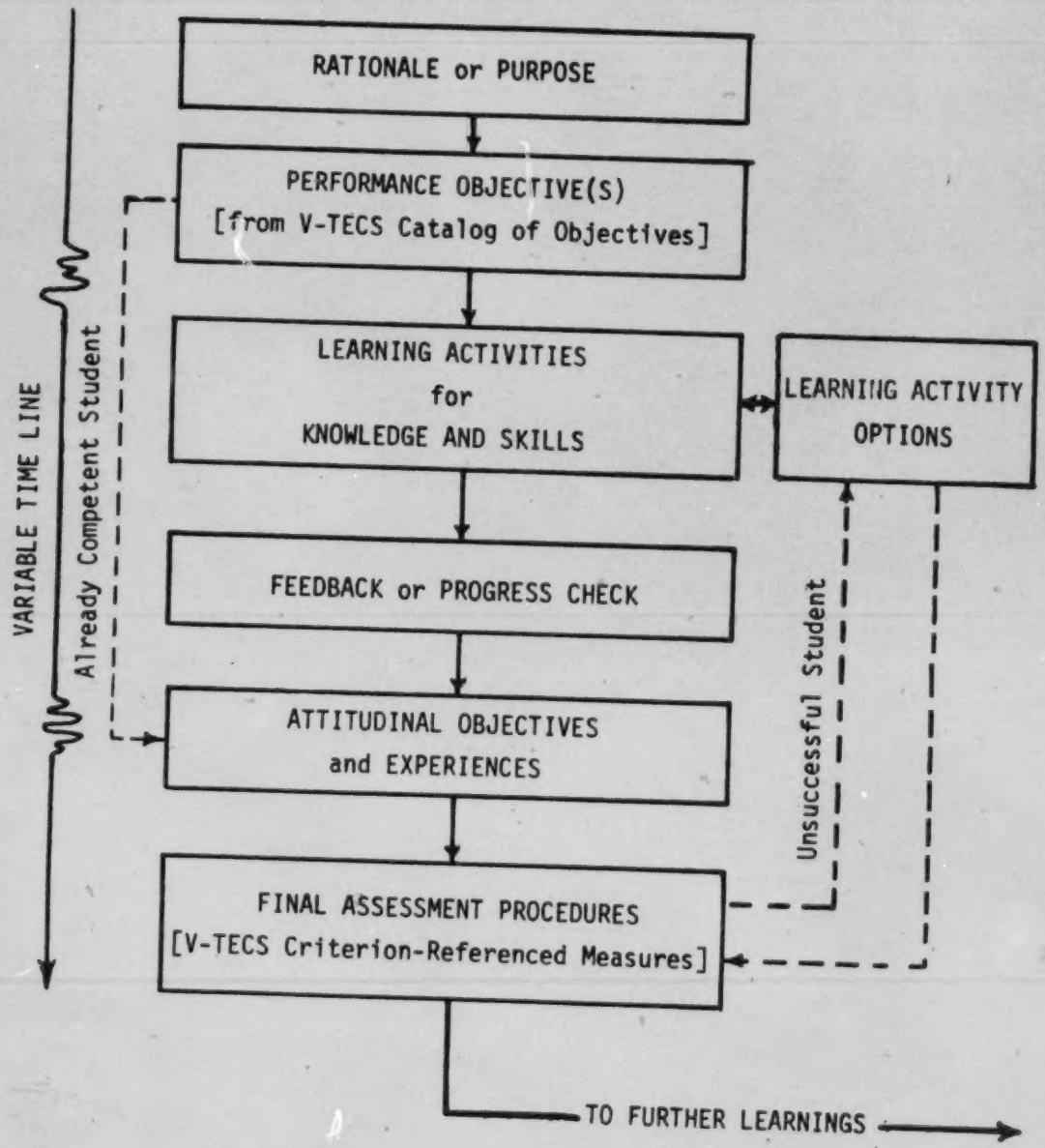


Figure 3

Presentation and Revision of the Model

A number of revisions and refinements were made to the prototype instructional module as a result of reaction and input from many individuals and groups. This input was the product of 24 formal presentations made to vocational leaders around the state in which the model was presented and verbal discussion and written comments elicited. Though many of the participants were being asked to consider competency-based education for the first time, their reaction to the concepts and the materials were essentially positive, helpful, and enthusiastic.

There was little basic resistance or objection to the theoretical basis of competency-based ecucation. The model was perceived as being well organized and thoroughly prepared, and no fundamental deficiencies were revealed. The reservations and anxieties expressed by the participants centered to a great extent around management problems and student acceptance of CBE. The reading level of the sample module was thought to be too high, and the supposed reliance of modular materials on reading was perceived to be a barrier to learning for many students. Problems related to classroom management, traditional school administration, and awarding of grades and credits were topics of concern. Doubts were expressed, particularly by teacher educators, that CBE could adequately provide for the affective component of education. To some teachers, the notion of a program based on

demonstrated competency rather than on accumulated time seemed to threaten their control of the teaching situation.

All of these responses were evaluated, along with further modifications suggested by the CDC staff's own rethinking of the problem. The following refinements were among those made to the revised module:

- The sentence structure and vocabulary have been reviewed and made simpler where possible, and educational jargon has been largely eliminated. This will also be carried through to the instruction sheets and supporting materials.
- The front page has been reorganized, with the Introduction, Directions, and Objectives being placed in that more logical order.
- The format for the objectives has been given greater clarity.
- The Learning Activities section has been revised to permit optional or alternative learning activities to be readily added by the instructor.
- The Final Assessment has been retitled Check-Out Activities to be more understandable to students.
- Typographically, the module number has been re-placed for easy filing, the CDC logo added, and type and symbols have been somewhat refined and unified.
- Other suggestions, such as instructions to the teacher for alternative activities and affective objectives, will be incorporated in the teacher's handbook.
- The expressed concerns relating to management problems and to affective education in competency-based education will require long-term assistance. A careful study of the problems--along with suggested courses of action--needs to be undertaken, with the results made available to teachers and administrators.

Sample Prototype Module

The sample module appended to this report incorporates the components required for instruction in all the proposed vocational programs of instruction. The front cover provides information on the program name, module title and number, and the objective numbers (from the V-TECS catalog). It also gives the student a brief introduction to the topic and directions for completing the module. The performance objectives are stated fully for the student.

The second page is reserved for a sequential list of the learning activities designed to help the student achieve the objectives. There may be several activities, or only one or two. The activities may be knowledge-based, skills-based, or both. There is provision for the instructor to modify the activities to suit the needs of his students by inserting alternative readings, projects, or exercises. Student self-checks and the final evaluation are included in the appropriate sequence.

The inside pocket is designed to hold any written materials needed to complete the learning activities. This may include information sheets, instruction sheets, project sheets, student self-checks, and the final assessment form. The loose form allows these materials to be revised and updated easily. It also permits the instructor to augment and enrich the learning activities and to add or substitute situation-specific materials designed to fulfill the individual needs of students.

The Check-Out Activities described on the back cover are those performances the student must satisfactorily complete in order to be considered as having demonstrated the competency on which the module is based. In most cases the teacher will evaluate the performance on the basis of criteria listed in the Final Checklist, a copy of which will appear in the materials pocket. Thus the student and teacher know and agree to in advance the performance required and the bases on which the student's competence will be assessed.

HANDBOOK

FOR THE DEVELOPMENT OF VOCATIONAL EDUCATION MODULES

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DISCRIMINATION PROHIBITED - Title VI of the Civil Rights Act of 1964 states: "No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." Therefore, any program or activity receiving financial assistance from the Department of Health, Education, and Welfare must be operated in compliance with this law.

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HANDBOOK
FOR THE DEVELOPMENT OF
VOCATIONAL EDUCATION MODULES

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April 1975

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Overview of the Handbook

This HANDBOOK has been written primarily for the assistance of the module developers working in the Kentucky Competency-Based Curriculum Project. It is also intended to be of help to module developers in other areas of education, and to administrators who will be installing competency-based programs in their schools.

The HANDBOOK describes the content of each of the components of a module, and explains the format to be used. It also gives guidelines and suggestions for writing each component to aid the module writer in producing effective instructional packages within the established framework of competency-based education.

Along with the descriptive material are exemplary samples of each component. These examples appear on colored paper in the text. The vocational program to which the example applies is indicated in brackets.

An example of a complete module is presented as a supplement at the end of the HANDBOOK.

Competency-Based Vocational Education

The Kentucky Bureau of Vocational Education and the Curriculum Development Center for Kentucky have made a serious commitment to the concepts of competency-based education (CBE) and to the belief that CBE can make a significant contribution toward the improvement of vocational education in the Commonwealth. The development of individualized instructional materials for a number of specific occupational programs is an indication of that commitment.

The CBE effort began with the selection of an initial group of occupations that were considered to be of high priority in terms of the manpower training needs of the state. As the first step in the CBE curriculum development process it was necessary to identify the competencies needed by occupational workers as they function on the job and therefore, the competencies to be included in the instructional program. The term "competence" does not refer solely to specific knowledge and skills, but may also include more complex abilities such as being able to think logically, organize work, and appreciate workmanship.

These essential tasks, or competencies, were validated by asking incumbent workers in the target occupations exactly what they do. The resultant list of competencies were translated into a catalog of performance objectives on which the competency-based instructional program is built. A criterion-referenced measure and a standard describe what the vocational student must do to demonstrate that he or she has mastered the performance required in the objective and thus acquired the necessary competence. The objectives and criterion-referenced measures become the basis for the materials of instruction for a

competency-based educational program.

Competency-based vocational education programs are programs in which the performance objectives are specified, and agreed to, in rigorous detail in advance of instruction. Students know what they are expected to be able to do before they complete the program and what standards of workmanship will be demanded of them. Each student is held accountable not for simply achieving passing grades, but for attaining at least a given minimum acceptable level of competency in performing the essential tasks of the occupation. The student must demonstrate his competency by performing the task while the instructor rates the performance, using a checklist or other objective measure.

Because students have a great range of abilities, learning styles, and motivation, some will take longer than others to achieve the required competencies. To allow each student to progress at his own rate, it therefore becomes desirable to individualize the instruction. Traditional instructional patterns of group demonstration, group testing, and unit organization do not work very well in competency-based education. Individualized instruction can be effectively achieved by devising student learning packages, called modules. The module is designed for student use and provides the student with the objectives he is asked to achieve, lists a sequence of activities to help him learn the competence, and outlines an objectively rated performance that will allow him to demonstrate his proficiency.

In fully individualized programs, the amount of time students are enrolled in a vocational program is not the standard by which they are certified as being ready to enter an occupation. The students will be considered as having successfully completed the program when, and only when, they have demonstrated their ability to perform the competencies

that have been identified for their career goals.

While the instructional module is the most important and obvious component of the competency-based curriculum, there are a number of other supporting components in the system:

Supporting instructional materials for students include such materials as slide-tapes, audio tapes, reference books, and models.

Supporting instructional facilities include study carrels, sound slide projectors, and related equipment needed to help the student complete the modules.

The instructor's manual is a guide for classroom instructors, designed to aid them as they work with students in the modularized program.

A program management system outlines procedures for installing the competency-based curriculum and management techniques to keep it progressing smoothly.

Orientation and training provides initial inservice education for instructors as they become responsible for directing competency-based programs.

Competency-based education, then, is not simply a collection of instructional modules for students, but a total system for planning, developing, and implementing a curriculum designed to ensure that students acquire the knowledge, skills, and attitudes essential for successful job performance.

Glossary of Terms

Competency. A skill, either cognitive or psychomotor, which is required in the vocation and which the student is expected to learn and demonstrate in the educational program.

Competency-based education [also performance-based education]. An education program in which the competencies (or skills) to be acquired and demonstrated by the student, as well as the criteria to be applied in assessing the competencies, are made explicit, and the student is held accountable for meeting those criteria.

Performance objective. A statement which specifies a competency a student is to acquire and demonstrate.

Affective objective. A statement which specifies an affective characteristic (value, attitude, commitment, response) a student is expected to acquire and demonstrate.

Instructional module. A set of learning activities in organized physical form, intended to facilitate the students' acquisition and demonstration of a particular competency or group of related competencies.

Learning packages. Instructional modules combined with other learning resources designed to provide complete experiences to facilitate acquiring competencies.

Prerequisites. Those competencies a student is expected to demonstrate prior to his beginning to work on a particular instructional module.

Learning activities [also, learning experiences]. Activities or experiences which are made available to a student with the intent that they will facilitate that student's mastery of an objective or set of objectives.

Feedback [or knowledge of results]. Procedures by which the student is informed as to his progress, areas of weakness, or his level of success in demonstrating the desired competencies.

Final assessment procedures. Measuring processes which are used to determine the student's level of mastery relevant to a specified objective or set of objectives following instruction intended to facilitate his achievement of mastery.

Components of the Modules

A standard module format has been adopted for use in all the occupational areas. It has been designed to ensure uniformity of appearance and consistency of approach. By following the module format, the writers will have fewer routine decisions to make and can concentrate on the instructional content of the module. Writers should follow the standard format given in the directions and the examples as closely as possible. The specific content, of course, will be unique to each module.

Each module contains the following components:

- A title
- An Introduction
- Directions
- Objectives
- A series of Learning Activities
- Special Learning Materials

    Instruction Sheets
    Student Self-Checks
    An Instructor's Final Checklist

Directions for the learning activities and the materials in the special learning materials should be clear, simple, and straightforward. The modules are designed to be as self-instructional as possible, so the student should not need to ask the instructor for clarification of instructions or for routine details. Assignments should be specific, required readings should list exact references and page numbers, and the instruction sheets should be clearly labeled.

Following are some general writing guidelines:

- Modules are intended to be read and used by students. Write to the student and for the student. Say it simply.
- When writing to students, use the personal term you, not one.
- Avoid educational and technical jargon. Define technical terms when they are introduced.
- Use a minimum of punctuation. Use capitals and underlining sparingly...save them for special occasions.
- Use the active rather than the passive voice. Say, *Put the lid back on the jar right away;* not *The lid needs to be placed back on the jar immediately as the contents are poured out.*
- Edit your own work before you submit it for typing.
- A reference to a book should list the following: author's last name, title of the book (underlined), edition (if not the first), and pages to be read. Do not include publishing information.

  e.g., Crouse; Automotive Mechanics, 5th edition, pp. 215-222.
- If students are to read a magazine article, furnish them with the following information: author's last name (if known), title of article (in quotation marks), name of magazine (underlined), date of issue (in parentheses), pages to be read.

  e.g., Wooten, "A Guide to Furnishings Conservation," Forecast, (March, 1975), pp. 26-28.
- When you refer the student to another module in the program, give module number and title in quotes.

  e.g., DA-51, "Making a Bite-Wing Radiograph."
- Use the term student for the learner of whatever age group. Do not use "pupil" or "trainee."
- Use the term instructor rather than "teacher."
- Videotape is one word. Audiotape is one word.
- In case of question as to accepted style of usage, talk to the project editor.

Module Title

Each module has a title which appears on the front page, at the top under the program name.

The title is designed to make the module easy to identify, and it tells in a few words what the student will be doing in completing the module.

The module developer is to write the title, using the following guidelines:

- Examine the objectives for the module and determine the skill or competency the module is designed to teach.
- The title should describe in clear and straightforward terms what the student will be doing.
- The title should be very short--about one to five (1-5) words.
- Avoid cleverness, puns, and obscure terms.
- Avoid unnecessary repetition of the program name in the module title. For example the word "tractor" is implied in the Tractor Mechanics modules: i.e., not "Installing Tractor Ignition Points," but simply "Installing Ignition Points."
- Use the present-participle form.

Examples of the Title

[BANK TELLER]

Cashing Checks

[DENTAL ASSISTANT]

Developing X-ray Film

[CHILD CARE WORKER]

Telling Stories to Children

[CARPENTRY]

Making Miter Joints

[CASHIER-CHECKER]

Bagging the Merchandise

[MACHINE SHOP]

Reading the Vernier Caliper

The Introduction

The "Introduction" section provides the student with a frame of reference for the module. It gives the student an idea of the purpose of the module, how it relates to what has already been learned, and how it relates to future learning. In very concise terms, the introduction tells what the student is going to learn in the module, and why it is important for the student to learn it.

The wording and tone of the introduction should attempt to allay the anxieties surrounding unfamiliar or difficult topics by assuring students that the objectives can be achieved. Within the restrictions of space, the introduction should attempt to provide motivation and arouse the student's interest in the learning experiences that are to follow. One way of doing this is to describe a useful skill the student will gain from the module.

The following are guidelines for writing the introduction:

- The introduction should be short, concise, and succinct. It must be no longer than 75 to 100 words.
- Use short sentences, with no difficult or unfamiliar terms.
- Use the second person form (e.g., "You will be learning how to thread the sewing machine.").
- If an unusual technical term appears in the module title (e.g., "Preparing the Amalgam") define the term very briefly in the introduction.
- Resist general trite statements of encouragement, such as "Good luck," or "You can do it!"

Examples of the Introduction

[BANK TELLER]

Many of the customers who come to your teller's window will have a check that they wish to turn into cash. Before the check can be cashed, it must be examined by the teller to be sure it is legally acceptable, then processed, and the cash dispensed. When batches of checks are presented by the customer, a somewhat more complex procedure is required. In this module you will learn how to handle these transactions.

[TRACTOR MECHANIC]

The engine ignition points are electrical contacts that open and close like a switch to send electricity to the spark plugs at just the right time. If the farm tractor engine is to start easily and operate with full power, the points must be installed carefully and adjusted very accurately. You must be able to adjust the points before you can go on with other engine tune-up operations. In this module you will learn how to clean old points, install a new set of points, and adjust the ignition gap to the maker's specifications.

Directions

The "Directions" section will be very similar for all the modules. The directions have three main functions:

1. to tell the student about any prerequisite modules or special conditions required.
2. to tell the student how to take the final test if he feels he already has the competency about which the module deals.
3. to help the student get started on the learning activities of the module.

In listing the prerequisites, list only those modules that are immediately and directly essential to the successful completion of the present task. Do not list all the modules that would normally precede it in a typical program. Most modules will have no listed prerequisites, or will have only one or two. Sometimes the module writer may want to suggest that the student review a particular module to refresh his memory on a topic.

There may be some special conditions that must be met before the student can successfully accomplish the module, such as the availability of a piece of special equipment, a live customer, a specified uninterrupted period of time, or even correct weather conditions. State any special conditions in the first sentence of the directions.

The format for the directions should follow the given examples very closely. Only a few words should be changed as appropriate (e.g., "read the three objectives below," or "read the objective below").

Examples of the Directions

[BANK TELLER]

Before you start to work on this module, be sure you have completed Module BT-12, "Using the Adding Machine," and Module BT-15, "Making Out Cash Tickets."

If you have completed these modules, read the three objectives below. If you think that you are already able to perform these tasks, read the Check-Out Activities on the back cover. Then either arrange with your instructor about doing the Check-Out Activities,

or

If you need to complete learning activities in order to be able to do the tasks, turn to p. 2 and go through the Learning Activities in the order given.

[COSMETOLOGY]

In order to complete this module you will need a customer on whom to practice. You may ask a classmate or an outside adult to take the role of the customer.

Read the objective below. If you think that you are already able to perform this task, read the Check-Out Activities on the back cover. Then either arrange with your instructor about doing the Check-Out Activities,

or

If you need to complete learning activities in order to be able to do the tasks, turn to p. 2 and go through the Learning Activities in the order given.

Objectives

There may be just one objective for the module, or there may be several. It is not the responsibility of the module writer to select the objectives but simply to verify that the given objectives are the correct ones for the module.

The objectives are to appear in the module in exactly the same form as they are stated in the V-TECS Catalog of Objectives and Criterion-Referenced Measures. Do not reword or reorganize them in any way. If a typographical or other error is suspected, the appropriate curriculum specialist should be consulted. Do not include the reference numbers from the V-TECS catalog.

If there are several objectives included in the module and they need to be put into a sequence, organize them on the basis of a chain of competencies; i.e., if the student needs to have accomplished one skill before he can be expected to accomplish another, place the objectives in that order. If there is more than one objective, number each one in its correct order.

Examples of Objectives

[BANK TELLER]

(1) Given a display of three checks with endorsements, examine each check and choose the one that is acceptable for cashing.

(2) Given a teller's window prepared for cashing checks and a teller's stamp, cash a single check. All items on the instructor's checklist should be performed acceptably.

(3) Given a teller's window prepared for cashing checks, a teller's stamp, and an adding machine, cash a batch of checks. All items on the instructor's checklist should be performed acceptably.

[CASHIER-CHECKER]

(1) Provided merchandise, a price list and price-marking tools and supplies, correctly price-mark all of the items so that when completed all of the prices will agree with those on the price list and all of the marked prices can be read.

Learning Activities

In many ways the Learning Activities section is the core of an instructional module. It translates the expected goals of the written objective into learning that results in real behavior change on the part of the student. The Learning Activities section tells the student just what he will need to do to achieve the objectives and master the necessary skills. It presents the activities in a very concise manner, and in an ordered sequence, directing the student to various specific resources, or asking him to engage in certain laboratory experiences. If the learning activities are well thought out and clearly stated, the student should be able to proceed through them with little or no management from the instructor. If the activities are carefully selected, the student will learn and will be able to perform the competencies involved in the module.

When instruction is modularized, individualized, and performance-based, the instructor's role and function change considerably. The instructor will not function very much as a lecturer, a discussion leader, or a presenter of classroom demonstrations. He or she will be more of a resource person, making learning diagnoses, giving prescriptions , providing assistance, asking questions, and making evaluations. Thus, the learning activities will not by-pass the instructor or turn the program into a kind of in-school correspondence course, but will utilize the instructor in a more efficient way in order to gain the most from his professional knowledge and expertise.

It is essential that the selected learning activities be designed to lead directly to the specified competencies of the module. They should

include everything a student needs to know or be able to do to reach the objective. It will not be assumed that the student will somehow fill in the gaps by asking around, watching somebody else, or making some good guesses. If he needs certain information, he will be told how to get it. If he needs to develop a physical skill, he will be shown the skill and be given the opportunity to practice until he has perfected his performance. If he is to produce something, he will be told what he is to produce and how to go about it.

At the same time the learning activities must not include extraneous matter and must not give students an assignment with the vague idea that somehow it will do them good. The readings should be directly to the point, the laboratory assignments carefully limited to what the student must be able to do, and the practice exercises should concentrate on the requisite skills. As the learning activities are devised, they will have to be constantly checked against the performance objectives to make sure they lead directly to student competence and the achievement of the objectives.

Most instructional modules in vocational education will include a knowledge component and a skills component in some form. Depending on the occupational service area and the learning strategy involved, most learning sequences will begin with experiences designed to increase awareness and provide the necessary foundational knowledge. This knowledge (or cognitive) component will include knowledge of terminology, facts, data, and other information related to the competency.

The next activity (or several activities) will present the student with the skills involved, and will provide opportunity to practice the skills at different levels of complexity and difficulty. The first

practice may be isolated and simple (for example: "Practice using the hand wood-plane on a scrap piece of wood until you achieve a smooth straight cut and a continuous chip.") Later practice may require more complex use of the skill under more demanding conditions (for example: "Plane all six sides of a board, keeping each square with the other, and within specified dimensions").

The final learning activities should provide experience as close to the real world and the criteria of the performance objective as possible. The balance of knowledge and skills performance will depend greatly on the subject matter content. The electronics student who is learning to deal with Ohm's Law will need to develop a great deal of knowledge of terminology, abstract concepts, and theoretical understanding, while the computational skills involved may offer little that is new to him. When he is completing a module on soft-soldering, however, the amount of new factual knowledge may be fairly minimal, but perfecting the skill of soldering under a variety of conditions may take a considerable amount of time and practice. The amount of stress to be placed on the acquisition of knowledge and the relative proportion devoted to performance of skills must be compared to the objective of the module and kept under strict control.

The last learning activity listed in the module will always be:

ARRANGE with your instructor to complete this module by going through the CHECK-OUT ACTIVITIES listed on the back cover.

Frequently instructors (and module writers) fall into a pattern of using only two or three kinds of learning activities in their instructional strategies. They are familiar with these few tactics, know that they usually work, and feel comfortable with them. The students, however, may well suffer from learning activities that are unsuitable for them,

lack variety of mental or physical challenge, or are just plain boring. Learning can be increased by varying the stimuli. In these modules, attempt to utilize a wide variety of learning activities to suit a range of learning styles and personal student interests.

It is very important that the number of learning activities included in any one module be limited to those <u>essential</u> to student learning of the competency. Activities thought to be enriching or included just because they might be "good experience" must be omitted. Keep the activities short so that the student can learn the material in a reasonable length of time. A module devoted to a limited skill may have only two or three learning activities. A module dealing with very complex skills or broad knowledge might have as many as eight or even ten learning activities, but this should be considered as the maximum.

SUGGESTIONS FOR LEARNING ACTIVITIES

The following section describes a number of kinds of learning activities that are suitable for use in individualized instructional modules. Some specific examples are also given. These suggestions are not meant to be all-inclusive, but are presented to stimulate the module writers' own creative thinking.

1. Readings from textbooks of short, relevant sections dealing specifically with the knowledge required to reach the objective. This may be a single reference or may be given as alternative references from different books.

2. Examination or data-gathering from standard reference books of the vocational field (e.g., Machinery Handbook, Graphic Standards, or Reference Manual for Office Personnel).

3. Completion of a section of a programmed text or other programmed material.

4. Reading of special materials available in the school library (e.g., books, encyclopedia articles, periodical articles from bound volumes, etc.).

5. Solving of practice problems in the skills component (computational problems, exercises, etc.).

6. Viewing or listening to individualized audio or audio-visual materials (e.g., slide-tapes, audio tapes, film strips, illustrations, models mock-ups .)

7. Observing or operating models, mock-ups or dummy set-ups to gain understandings of mechanisms or operating controls (e.g., plastic mock PBX board, rotary engine, set-up of electrical circuit, practice key board.)

8. Role-playing of performance in a simulated situation. Students may take the principal role of the practitioner or the participating role of the customer, the assistant, the audience, etc. These should be final learning activities.

9. Real-life performances, where the students function for short periods of time under controlled conditions in an actual work situation, or a situation very close to real (e.g., conducting a story-reading time at a child-care center, setting up equipment in a surveying team). These also should be final learning activities.

10. Observing the skilled vocational worker in a real work situation. This should be done with specific goals in mind, usually with some form of guide, observation instrument, or report form to give structure and point to the observation period.

11. Videotaping of student performance, to be viewed and used by the student to evaluate and improve his performance.

12. Simulation experiences, where a student goes through a "dry run" of the performance with the conditions controlled and consequences minimized. "Case Studies" in which students write their reactions and responses to the given situation are also considered simulation experiences (e.g., working with dummy patient in health care; a model head in cosmetology; disassembling and assembling a non-functioning aircraft engine).

13. Small-group experiences, when students at closely related points of achievement can get together to discuss, plan, or evaluate their work (e.g., discuss results of observation, plan for role-playing sessions, evaluate the instructional value of their activities).

14. Instructor demonstration of an operation. There may be instructional situations in which the only solution is for the instructor to personally perform the operation and describe it as students observe. Usually this will need to be on an individual basis, but sometimes may be possible for small groups or even the total group.

15. Guest speakers or outside experts. These classroom experiences may be listed in an appropriate module and may be scheduled by the teacher at a time when many students are ready for the experience. Usually the nature of the topic is such that the whole group can benefit, even though they may not be at that exact point in their learning.

16. Production or construction of projects or services. These must directly contribute to the objective and therefore must be carefully designed and assigned, be of limited scope, and require a limited amount of time (e.g., do a complete manicure on a fellow student; construct a W truss; make working drawings of a floating footing; make a skirt with zipper; decorate a cake with icing).

17. Problem-solving activities. Some objectives may require solving the problem involved in given situations. These may be relatively short experiences (e.g., prepare a luncheon menu for a particular group) or quite long-term jobs (e.g., design a vacation cottage for a family of four in a mountain setting). It is very important in problem-solving activities that the student is known to possess the requisite skills, that he has access to the information necessary to solve the problem, and that the problem not go beyond the performance objective.

18. Skills practice exercises. Some skilled operations may require that the student not only be able to perform them correctly once, but require that the student be able to do them smoothly and flawlessly every time. Learning activities may therefore specify practice periods in terms of time, number of repeated experiences, or quantity of production (e.g., make welds without a rod for two hours; produce ten perfect button holes, take dictation in shorthand).

19. Memorization. The performance objective may require or suggest that the student can best function if he has committed some information to memory. This is a legitimate learning activity (eg., memorize the table of metric measures, memorize the Gregg characters, memorize the fomula for lathe speeds, memorize a list of technical terms).

20. Collecting activities. Some performance objectives may be reached by asking students to gather and collect real objects so as to become familiar with their characteristics, the variety available, the settings in which they may be found (e.g., make a collection of metal fasteners, building materials, local lawn weeds, children's street games, newspaper classified ads).

21. Scaled-down performance. If the real performance is large in physical size, complex because of the number of participants, or consumes a quantity of expensive materials, a limited performance or a scaled-down situation may give the student a better chance of gaining confidence or success and may be more instructionally efficient and practical. (Examples of scaled-down experiences are: teach an outdoor game to two children, construct a scale model of a built-up roof construction, lay out an irrigation system on a land contour model, build a corner of a block wall.)

22. Reading of the Information Sheets specifically prepared for the module. These will be concise statements of very relevant information that is geared to the student's level and available from no other convenient source.

23. Performing experiments in the laboratory. Assign the student specific experiments to perform with specified equipment and processes, observe the results, and report or utilize the results in some form.

24. Writing of technical reports, reactions to case studies, reports for class discussion, etc. This activity may be particularly valuable in the technical areas.

25. Preparing visual materials. Gather information and produce diagrams, schematic drawings, charts, graphs, topographic maps, contour maps, graphic solutions, structural drawings, styling illustrations, layouts, design sketches. Activities of this type are usually interesting to students, add variety to the learning experience, and tend to reinforce learning.

26. Planning experiences. Performance objectives may require that the student learn how to plan the job or operation. Planning may include selecting or designing the job, developing a sequence of procedures, figuring materials and costs, noting checkpoints and safety cautions, devising evaluation standards.

27. Critique or evaluation experiences. In these, the student is asked to rate or evaluate an example of a finished product or service, or make a critical analysis of a performance of a specified skill. The object of the evaluation may be a sample product, the work of a fellow student, the student's own work, a film or videotape of a performance. The final result may be a rating sheet, written report, or oral report.

28. Cooperative student experiences. Though instruction may be individualized there are situations when two or more students may work together in a learning experience. Many occupational tasks involve teamwork, and it is proper for the learning activities to incorporate this. Activities that involve heavy lifting, cooperative production techniques, worker interaction, or where a team approach is used in the occupation are places where cooperative student experiences are applicable.

RECOMMENDATIONS ABOUT LEARNING ACTIVITIES

- Readings must be directly related to objective--the writer should not require the reading of a whole chapter just because it would be good to know, when a page or two is all that is really necessary.

- Viewing motion picture films on an individual-student basis is usually not feasible because of the difficulties of getting the film, projector, viewing room arranged. The use of overhead transparencies may still be helpful in some situations, especially if good ones are already available. The equipment is not difficult to use.

- The instructor must not be overused in the routines of learning experiences, but released for his or her functions of assisting, helping students overcome learning difficulties, and evaluation. (e.g., Do not use instructor in routine role-playing, for additional assignments or information, in practice exercises.)

- Observation experiences should be directly pointed toward the performance objective and not undertaken simply in the hope that somehow the experience will increase learning. Observation time must be reasonably short. Arranging for observation must not be embarrassing or difficult for the student, or time consuming for the teacher.

- In individualized instruction, teacher demonstrations will need to be strictly limited. It is unrealistic and inefficient to expect that the teacher will be able to present elaborate demonstrations to each student individually as needed. Group demonstrations are not likely to take place at a time when all students will be ready to learn from them, except perhaps in the early stages of a course. "Mini-Demonstrations," taking just a minute or two to complete, may be a practical device.

- Every vocational teacher should be concerned with the improvement of student communication skills, but in most vocational areas the success in the program should not depend on the student's ability to read at a high level or write skillfully. Most learning activities, therefore, should not require high level communication skills, and the evaluations should not be based on the student's ability to write effectively. Of course, if the program performance objectives specify a certain verbal ability, the learning activities can be expected to reflect this.

- The learning activity assignments as listed on p. 2 of the module should consist of short and concise statements such as are shown in the examples. If there are learning activities that require long instructions or suggestions (for example, an observation experience), these should be fully explained in an instruction sheet that will appear in the Special Learning Materials pocket. The learning activ-

ity assignment on p. 2 should simply refer to this instruction sheet by title.

e.g., READ Instruction Sheet I, OBSERVING THE CHILD-CARE WORKER IN ART ACTIVITIES.

- The learning activities statement is to begin with an action word (verb) to signal the student what he is to do in the activity. This action word will be placed in capital letters and underlined. Sometimes, in order to make the meaning clear, it will be necessary to capitalize and underline the first two or three words of the statement (e.g., PLAY THE ROLE..., not PLAY).

Examples of Learning Activities

1 → READ Jones and Laughlin, The Bank Teller: Tasks and Procedures, pp. 81-97.

(or)

2 → VIEW the slide-tape presentation BT-17, "Cashing Checks," in the Learning Center.

(or)

3 → COMPLETE THE PROGRAM in the A.B.A. booklet, Checks, pp. 26-97.

(or)

4 ✓ CHECK YOUR KNOWLEDGE of examining checks for acceptability by taking Student Self-Check I, EXAMINING CHECKS FOR ACCEPTABILITY.

5 → READ Instruction Sheet I, PAYING CURRENCY.

(or)

6 → PLAY THE ROLE of the bank teller in dispensing currency. Ask a fellow student or your instructor to request amounts of money in specific denominations. Using a supply of currency at the teller's window, go through the transactions of dispensing the correct currency.

(or)

7 → PRACTICE processing batches of checks in the learning laboratory. Get the practice materials for Module BT-17, and use the adding machine to prove your totals.

8 ✓ ARRANGE with your instructor to complete this module by going through the CHECK-OUT ACTIVITIES listed on the back cover.

[DENTAL AUXILIARY]

Examples of Learning Activities

1 → REVIEW THE TERMS given in Instruction Sheet I, TERMINOLOGY OF BITE-WING RADIOLOGY.

2 → READ Anderson, Dental Radiology, pp. 27-28 and pp. 40-45. (or) Read Simmons, Clinical Dental Assisting, pp. 71-77.

3 ✓ CHECK YOUR KNOWLEDGE of bite-wing radiology by completing Student Self-Check I, BITE-WING RADIOLOGY.

4 → VIEW the slide tape presentation D.D.M. 820, "Oral Radiology: Interorals Techniques," in the Learning Center.

5 → EXAMINE AND IDENTIFY accessories needed to take a bite-wing radiograph. Read Instruction Sheet IV, ACCESSORIES FOR BITE-WING RADIOLOGY.

6 → STUDY Instruction Sheet V, POSITIONING THE PATIENT AND PLACING THE INTERORAL BITE-WING FILM IN THE ORAL CAVITY.

7 → PRACTICE positioning the patient and placing bite-wing film. Use the mannequin in the skills laboratory.

8 → PRACTICE by using a short cone 8" target film distant and set the proper MAS and KU on the x-ray machine in accordance with the exposure chart.

9 → DEMONSTRATE to your instructor specific safety rules to be observed in protecting the patient and yourself.

10 ✓ ARRANGE with your instructor to complete this module by going through the CHECK-OUT ACTIVITIES on the back cover.

Student Self-Check

The "Student Self-Check" is a device included in the module to allow the student to check his or her own progress toward final mastery of the competency. It is primarily used to check on the cognitive or knowledge phase of learning that usually forms the first of the learning activities. Because it is a self-check, designed to help students improve their learning, it is not to be utilized by the instructor for purposes of grading. In the sequence of learning activities, the self-check will typically be placed right after the readings or other cognitive experiences.

The student self-check may take a wide variety of forms, depending on the subject matter and approach. These forms may include, among others:

- questions that require a short essay-type response
- review items in a textbook to which the student is referred
- a series of objective test items
- diagrams, charts, sequence lists, etc., that require completion
- paper-and-pencil problems to solve
- test items presented orally on tape

Correct responses to the self-check items should be supplied by the module writer. The student needs to be given knowledge of results to reinforce his correct responses and to provide an opportunity to learn the material missed. For essay-type items, model answers should be given; other items require correct solutions, answers, or completed devices. The correct responses can be given at the bottom of the page (perhaps upside down to discourage peeking), on the back of the self-

check sheet, or on a separate sheet. Since modules are planned to be largely self-instructional, the instructor should not be involved either in administering the self-check or furnishing the responses. Of course, any student who has questions or difficulty with the self-check has the option of talking it over with the instructor.

Example of Student Self-Check

Student Self-Check I

SETTING THE LATHE FOR SPEEDS AND FEEDS

Write a brief definition of the following terms:

1. CUTTING SPEED _____

   _____

2. FEED _____

   _____

What do the following abbreviations stand for in lathe terminology?

3. cs _____

4. fpm _____

5. D _____

Use the correct formula given in Johnson, Machine Shop, p. 130 to solve the following problems:

6. What is the cutting speed in feet per minute of a piece of carbon steel 1 1/2" in diameter, revolving at 150 rpm. _____

7. Find the cutting speed of a piece of aluminum 7/8" in diameter turned in a lathe at 180 rpm. _____

8. Find the rpm at which a piece of tool steel 3/4 D should be turned. _____

ANSWERS

1. The distance the workpiece moves past the cutter in one minute as measured on the circumference.
2. The distance the tool travels along the lathe for each revolution of the workpiece.
3. Cutting speed in feet per minute.
4. Feet per minute.
5. Diameter of the workpiece in inches.
6. 59 fpm.
7. 41 1/4 fpm.
8. 265 rpm.

Instruction Sheets

The inner pocket of the module is designed to hold instructional material needed by the student to complete the learning activities and to achieve the performance objective of the module. Most of the material contained in the pocket will be in the form of instruction sheets. The term "Instruction Sheet" is a general term for all kinds of typewritten, printed, mimeographed, duplicated, or blueprinted instructional material to be used by vocational students in the laboratory or classroom. An instruction sheet may be a single sheet or several pages and may be prepared by the module writer, derived from school sources, or obtained from commercial publishers or industrial sources.

Instruction sheets in the module are basically completely prepared mini-lessons of some kind, intended to aid self-instruction, and including all necessary information and directions. There are a number of types of instruction sheets that may be used in a module, each with its own purpose and characteristics. Some of the most suitable types are:

- Job Sheet, or project sheet. This form of instruction sheet is designed to give instructions and specifications for doing a complete piece of work or a job. It may include detailed directions in verbal form, consist of a working drawing or both.
- Operation Sheet. This is a sheet giving instruction in a single operation or process that requires some special knowledge or skill of the student. There may be several operations involved in any given job.
- Information Sheet. This is provided to furnish students with special information--special because it is very new, obscure, difficult to obtain, or necessary to have close at hand.
- Assignment Sheet. This may be a sheet of problems to be solved, questions to be answered, observations to be made, or tests to be performed.

- Work Sheet. This is a printed form to be filled in by the student in the process of gathering data, performing a job, or solving problems.

It is helpful for the module writer to develop the various types of instruction sheets listed above in terms of the function and form. It is not necessary for students, however, to be concerned as to the classification of the instruction sheet that they are asked to read. The sheet heading, therefore, will simply indicate that it is Instruction Sheet I (or a consecutive number), along with the specific title of the sheet (for example, GREETING CUSTOMERS).

All instruction sheets, of whatever type, require careful thought and preparation. All facts, data, and specifications should be thoroughly checked for accuracy. Spelling, grammar, and technical terminology must be beyond reproach. Modern textbooks in the occupational service areas are usually filled with clearly written and well illustrated information and instruction, so it is not necessary for the module writer to duplicate this material. The module learning activities should simply refer the student to the appropriate reference.

Instruction sheets should be developed for the module if:

- The information is new or unusual, or for some other reason textbook instruction is not available.
- Students need to refer to instructions frequently in order to complete the laboratory work.
- The available readings are scattered, written at the wrong level, or are filled with much extraneous material.

Where instruction sheets are required, the following general guidelines apply:

- Use language that is straightforward and easily understood by the students for whom the sheet is intended. Define new terms.
- Supplement the words with sketches, illustrations, and diagrams for greater clarity.

- Give specific directions that are clear, concise, and minimize the need for explanation by the instructor.

- Limit each instruction sheet to one piece of paper if possible, but avoid crowding the page.

- Use a uniform format for all instruction sheets so students can easily find the desired information. Space the various divisions of the sheet (such as title, purpose, illustrations, and text) to produce an easily read and attractive page.

- Be consistent in terminology to avoid confusion.

- Include only relevant material, designed to help the student achieve the objective. Use strict discretion to avoid filling the sheet with unnecessary information, no matter how fascinating it may seem.

- Instruction sheets for the early modules of a program may need to be very structured and specific. Exact procedures, tools and materials may be given in detail so nothing is left to chance. In the later modules, the instruction sheets may be less fully detailed to allow the students to solve some of the problems involved.

- Do not copy published and copyrighted materials. Such materials can be used only as a basis for writing original instruction sheets.

- All instruction sheets must be suitable for duplication on 8 1/2" x 11" paper.

- Instruction sheets will be produced in many forms according to their purposes. In the case of the job or project sheet, however, it will probably aid the student if the same format is used throughout all the modules of the program. A suggested format for such a sheet follows.

Sample Format for Job or Project Type Instruction Sheet

[*Material in italics describes the content to be included*]

Instruction Sheet

JOB TITLE: [*Name the job in a word or two.*]

REFERENCE: [*Reference to textbook instructions, illustrations, specification sheets, manuals, or other materials needed to complete this job.*]

LABORATORY WORK: [*Instructions for completing the skills phase of the job. Including as appropriate:*

--Materials required
--Tools and equipment required
--Illustration or drawings of completed job
--Step-by-step procedures
--Dimensions and/or specifications
--Safety precautions or special requirements]

CHECKPOINTS: [*Note specific places in the work when the instructor should be called in to check on the progress of the job.*]

EVALUATION: [*Describe the procedures for the instructor's evaluation of the job.*]

Instruction Sheet II

PAYING CURRENCY

Handling currency is one of the most important functions you perform. Skill in handling currency can be acquired only through practice and application. In paying out currency, the following points should always be remembered:

1. Save time by asking the customer in which denominations he prefers his change.
2. Get the amount clearly in your mind. When paying out change from a split check, be sure to verify the change count with your adding machine, and check with the tape once more before handing out the change to the customer.
3. Count out large bills first.
4. Always perform two cash counts:
   a. One as the currency is removed from the drawer.
   b. The second as the cash is paid out to the customer.
5. Pick up each bill with the forefinger and thumb, roll it to separate it from the remaining bills, and place it in the other hand with the balance of bills to be paid out.
6. Don't count the currency faster than the customer can count; he will often recount and hold up the line while doing so.
7. If the customer changes his mind about the denomination, the request should be complied with cheerfully.

Example of Instruction Sheet

Instruction Sheet II

VENEER GRAFT

OPERATION: Making a veneer graft on tree stock

PURPOSE: The veneer graft can be used successfully to propagate fruit trees on stock 1 year old or older.

CONDITIONS: Scions should be terminal, 3 to 4 inches long, 3/8 to 1/2 inch in diameter.
Buds should be swollen, but not sprung.
A large terminal bud on scion is preferred.

TOOLS AND MATERIALS: .0035" vinyl film strips
Sharp knife

PROCEDURE:

1. Make a slanting cut about 2" long in side of stock so that at the bottom the cut is 1/16" to 1/8" in depth.
2. Make an angular cut at the base of the large cut so as to remove the piece of bark and wood. (Fig. A)
3. From the scion, cut a piece of bark and wood to correspond with the cut in the stock. (Fig. B)
4. Fit the little tongue on the base of the scion into the notch at the lower end of the cut on the stock.
5. Wrap the graft snugly with a strip of vinyl film, leaving the terminal bud exposed. (Fig. C) The graft should take in 3 or 4 weeks.

A. STOCK

B. SCION

C. SCION IN PLACE

Check-Out Activities

The check-out activities are really items for a final test of the competencies the student is expected to learn in the module. This section is sometimes referred to as the "final assessment procedure," or "final evaluation." Before the student can be certified as having completed the module, he or she must have gone through the check-out activities and have accomplished the required tasks at the specified level of performance. The final assessment is always done by the instructor.

In some cases, students who have had previous experience in the occupation, or who have acquired the skill in general life experience, may be able to go through the check-out activities without having done the learning activities of the module. The check-out activities and the final checklist must be written and administered so that the student who has acquired the requisite skill outside the classroom will in no way be at a disadvantage in the evaluation procedures.

There are two main parts of the check-out activities as written in the module: (1) the statement of directions, and (2) the list of activities themselves. The directions will consist of a very short statement telling the student how he is to go through the check-out activities and what instrument or procedure the instructor will use to rate his performance. In all cases the student should clearly understand how he will be evaluated and what evaluation criteria will be used--there should be no obscurity.

The check-out activities themselves will be taken directly from the V-TECS catalogs and in fact will be the criterion-referenced measures for

the given objectives. There should be no change in wording or organization of the measures. The check-out activities are to be presented on the back page of the module in the same order or sequence as the objectives are presented on the front page.

Examples of Check-Out Activities

[BANK TELLER]

The statements below explain the activities you must be able to complete in order to finish this module. As you go through each activity, your instructor will rate your performance using the Instructor's Final Checklist, EXAMINING AND CASHING CHECKS.

1. Your instructor will provide a display of three checks with endorsements. Examine the face and endorsement of each check. Place an "X" across the check that is acceptable for cashing.

2. Go to the teller's window. Remove the check from the container labeled "Customer," and cash the check.

3. Go to the teller's window. Remove the checks from the container labeled "Customer," and cash the batch of checks.

[CHILD CARE WORKER]

The statement below explains the activity you must be able to complete in order to finish this module. Go through the activity and submit the results to your instructor who will evaluate your work using the Instructor's Final Checklist, PLANNING SPECIAL ACTIVITIES.

1. The teacher will provide you with a case situation. Plan a field trip, the use of a resource person, a holiday celebration and a party for the situation described.

Instructor's Final Checklist

An "Instructor's Final Checklist" will be needed in almost all modules, either derived from the V-TECS catalog or developed specifically for the module by the module writer. The purpose of the checklist is to provide the instructor with an instrument to determine whether or not the student has mastered the competencies taught in the module. By listing a series of elements to be rated by the instructor, the checklist makes the evaluation much more objective and ensures that the instructor rates all the important elements in the competence. This kind of carefully controlled evaluation is absolutely essential to the validity of competency-based education.

When the student thinks he is prepared, he asks the instructor to examine his work or observe his actual performance of the task. The instructor then rates the performance or the product according to the criteria stated on the checklist. A copy of the checklist will appear in the module, so the student will be in no doubt as to what he is expected to be able to do.

The checklist may be designed to rate the performance of the student as he demonstrates competence in performing an operation, a process, or a behavior (e.g., shutting down a gas-welding outfit; teaching a song to children; dealing with a customer's complaint).

The checklist may evaluate the final product produced by the student which indicates his competence in the required task (e.g., a specified floral arrangement; a spray-painted auto body; a television set with correct color convergence).

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The checklist may evaluate the final product produced by the student which indicates his competence in the required task (e.g., a specified floral arrangement; a spray-painted auto body; a television set with correct color convergence).

The checklist may assess a combination of both process and product where both are important. This evaluation is necessary to determine that the student can not only complete the task successfully, but can do it correctly every time, with a specified period of time, using certain accepted procedures, or do it with smoothness and ease (e.g., replace a clutch within flat-rate time; perform a hair frosting while keeping the customer comfortable; make a dental x-ray without exposing oneself to radiation).

The items on the checklist must not be selected in an arbitrary manner or from a personal viewpoint as to what is important for the student to know. The checklist is to be derived from the objectives in the V-TECS catalog. Many of the objectives in the catalog already have evaluation checklists developed for them, and these can be readily translated into the accepted module format.

Checklists can also be derived from the Performance Guide of the V-TECS catalog. In doing this, each item in the performance guide for the particular objective should be reviewed. The items that relate directly and importantly to the performance objective should be reworded for inclusion in the evaluation checklist. Some items in the Performance Guide can be combined to make one point of evaluation.

The following guidelines should be used in developing the checklist:

- Indicate the module number in the upper-right corner.
- The title of the checklist is exactly the same as the title of the module.
- The directions should be worded the same on all checklists--with the exception of the first sentence which describes the student performance.

- Whenever possible, avoid repetition by using an introductory phase ending in a colon, followed by a list of performance elements.

- All the items should be stated in the past tense (e.g., "The student adjusted the shut-off valve").

- The checklist has a column for a rating of "Partially Accomplished." This rating is not acceptable for proving final competence, but it can be used as a basis for student/teacher discussion.

- The column marked "Not Applicable" is there to be used when circumstances do not permit the instructor to rate the student (e.g., equipment not available; the item does not fit the program; etc.)

- Each checklist is to have a statement of the performance level required of the student. The "Performance Level" statement should be reproduced exactly as shown in the example of the checklist that follows, except in cases where the V-TECS catalog specifies a lower level of acceptable performance.

- The checklist must be designed to fit a standard 8 1/2" x 11" sheet.

- Keep the checklist within a reasonable length--one page if possible, two if necessary. Remember that the instructor is going to be required to rate every item. Select items that are crucial to the performance of the competence and/or combine items.

Example of Instructor's Final Checklist

Instructor's Final Checklist
EXAMINING AND CASHING CHECKS

Check the student's performance in the following elements of examining and cashing checks.

Place an X in the appropriate box indicating not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, the item was impossible to complete, place an X in the "Not Applicable" box.

Performance Level: All items must receive a rating of FULLY ACCOMPLISHED (or Not Applicable). If any items are rated Not Accomplished, or Partially Accomplished, the student and instructor will discuss this and decide which learning activities must be repeated.

	Student Performance			
	Not Applicable	Not Accomplished	Partially Accomplished	Fully Accomplished
1. The student examined checks for acceptability and identified all checks that were not acceptable.	[ ]	[ ]	[ ]	[ ]
2. In the process of cashing a single check, the student:				
a. examined negotiability points of the check.	[ ]	[ ]	[ ]	[ ]
b. prepared cash-out ticket.	[ ]	[ ]	[ ]	[ ]
c. dispensed money	[ ]	[ ]	[ ]	[ ]
d. retained correct information for the records. . . .	[ ]	[ ]	[ ]	[ ]
3. In the process of cashing a batch of checks, the student:				
a. examined negotiability points of each check	[ ]	[ ]	[ ]	[ ]
b. proved the total of the batch of checks	[ ]	[ ]	[ ]	[ ]
c. prepared the cash ticket.	[ ]	[ ]	[ ]	[ ]
d. dispensed cash to the customer.	[ ]	[ ]	[ ]	[ ]
e. processed the checks.	[ ]	[ ]	[ ]	[ ]
f. retained correct information for the records. . . .	[ ]	[ ]	[ ]	[ ]

Example of Instructor's Final Checklist

Instructor's Final Checklist
ORGANIZING AND GUIDING STORY TIME

Check the student's performance in the following elements of organizing and guiding story time.

Place an X in the appropriate box indicating not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, the item was impossible to complete, place an X in the "Not Applicable" box.

Performance Level: All items must receive a rating of FULLY ACCOMPLISHED (or Not Applicable). If any items are rated Not Accomplished, or Partially Accomplished, the student and instructor will discuss this and decide which learning activities must be repeated.

	Student Performance			
	Not Applicable	Not Accomplished	Partially Accomplished	Fully Accomplished
In organizing and guiding story time, the student:				
1. Selected an activity appropriate to the interests and needs of the group.	[ ]	[ ]	[ ]	[ ]
2. Prepared materials required for the activity.	[ ]	[ ]	[ ]	[ ]
3. Assembled needed materials, supplies, and equipment	[ ]	[ ]	[ ]	[ ]
4. Used techniques to discourage loudness during the activity.	[ ]	[ ]	[ ]	[ ]
5. Aided and encouraged the children in developing word concepts	[ ]	[ ]	[ ]	[ ]
6. Used techniques designed to get the participation of each child in the activity	[ ]	[ ]	[ ]	[ ]
7. Used a variety of stories, including the familiar and unfamiliar.	[ ]	[ ]	[ ]	[ ]
8. Practiced positive disciplinary techniques.	[ ]	[ ]	[ ]	[ ]
9. Completed a self-evaluation of performance in guiding story time.	[ ]	[ ]	[ ]	[ ]

Instructor's Final Checklist

PLAIN-TURNING PROJECT I

Check the student's performance in the following elements of plain-turning on an engine lathe.

Place an X in the appropriate box indicating not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, the item was impossible to complete, place an X in the "Not Applicable" box.

Performance Level: All items must receive a rating of FULLY ACCOMPLISHED (or Not Applicable). If any items are rated Not Accomplished, or Partially Accomplished, the student and instructor will discuss this and decide which learning activities must be repeated.

	Student Performance			
	Not Applicable	Not Accomplished	Partially Accomplished	Fully Accomplished
The plain-turning project completed by the student exhibited the following characteristics:				
1. The length of the piece was to specified dimensions, within ± 1/32"	[ ]	[ ]	[ ]	[ ]
2. Diameter of cylindrical section was to specified dimension, within ± .001" over its entire length	[ ]	[ ]	[ ]	[ ]
3. The shoulder was clean, sharp, and at 90°.	[ ]	[ ]	[ ]	[ ]
4. Rounded end had 1/16" radius, with smooth and uniform curvature.	[ ]	[ ]	[ ]	[ ]
5. Surface finish was smooth, with no noticable defects or tool marks.	[ ]	[ ]	[ ]	[ ]
6. All sharp edges were deburred.	[ ]	[ ]	[ ]	[ ]

Instructional Illustrations

Illustrations in a variety of forms are extremely valuable in developing effective instructional modules. Many times, illustrations can explain, instruct, and clarify in a far more efficient manner than can words. For students who have limited reading abilities, a good drawing can make the difference between learning or not learning the competency of the module. Artists are available to assist module writers in developing and completing instructional illustrations. Available time and financial resources, however, impose some important limitations on the use of illustrations.

All of the illustrations used in the module must have a strictly instructional purpose. Each drawing, diagram, or sketch must be planned to teach a specific concept or transmit some well-defined information that cannot be done as well in any other way. It will not be possible to use illustrations simply for aesthetic reasons, or to entertain the students, or to fill space. Illustrations will be limited to the instruction sheets which will be placed in the inner pocket of the module.

Illustrations may take the following forms:

Diagrams	Charts & Graphs
Schematic Drawings	Plan Drawings
Enlarged Details	Simplified Drawings

Original illustrations should not be specially made when they are already available from other sources. If a good drawing is available in a standard textbook, the module writer should refer the student to the page in the text where it appears. Writers and artists should examine the files of existing drawings to determine whether useable ones already exist, thus saving a great deal of the artist's time. However, under no

circumstances should copyright materials be used in the modules or should photocopies be made for reproduction.

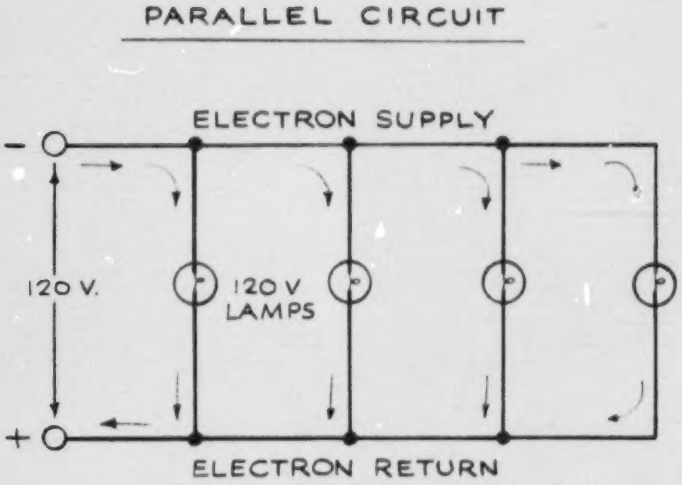
The information to be included in the drawing, and the form the drawing should take, are the responsibilities of the module writer. The writer should provide the artist with all the material, information and technical data that is necessary to complete the work. It is not the responsibility of the artist to do research on the topic, though he may have ideas and suggestions on how to make the drawing best convey the message.

GENERAL GUIDELINES FOR ILLUSTRATIONS

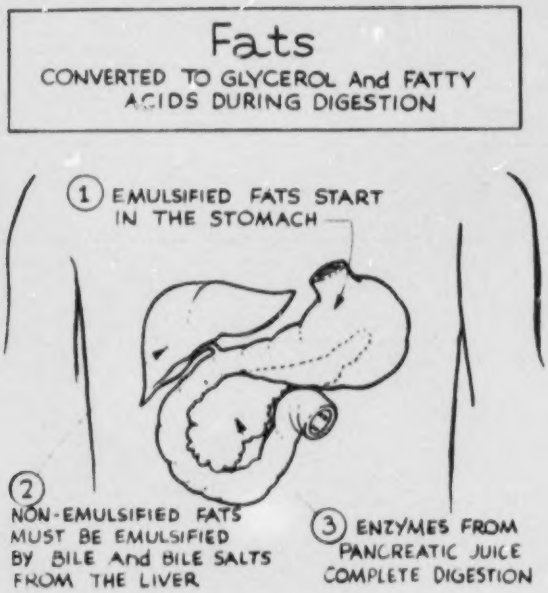
- Plan to use line drawings with simple, bold lines--no halftones or photographs.
- Avoid the necessity for the use of shading techniques.
- Make the drawings simple and stylized rather than heavily detailed.
- Concentrate on one concept or idea in the drawing. Focus on what is essential and eliminate the nonessential.
- Plan to use few (if any) drawings of human figures, hands, or other difficult material.
- Artists will letter drawings in professional freehand style or by typewriter. The use of rub-off letters or LeRoy lettering is restricted to unusual circumstances.
- Lettering size: 1/8" or larger will be standard for drawings, 3/16" or larger for projected material.
- The original drawings will be made in pencil. The use of ink will be restricted to special requirements.
- Captions for drawings will be furnished by module writers. Use short, descriptive phrases, with correct technical terms and spelling.
- Artists will use templets and other time-saving devices whenever possible.
- Finished drawings must fit 8 1/2" x 11" format. Minimum margins: Vertical drawings: 1" top and sides, 1 1/2" bottom; Horizontal: 1" top, right, and bottom; 1 1/2" left.

Examples of Illustrations

[ELECTRICITY]



[HEALTH OCCUPATIONS]


Fats
CONVERTED TO GLYCEROL And FATTY ACIDS DURING DIGESTION
1 EMULSIFIED FATS START IN THE STOMACH
2 NON-EMULSIFIED FATS MUST BE EMULSIFIED BY BILE And BILE SALTS FROM THE LIVER
3 ENZYMES FROM PANCREATIC JUICE COMPLETE DIGESTION

Instructional Media

Audio and visual instructional materials can make a more important contribution to individualized instruction than to traditional education methods. These kinds of materials augment the teacher's function by providing another path to learning--a way that may be best suited to many students' abilities and learning styles. By providing variety in learning activities, media presentations benefit all students; maintaining interest, stimulating thought, and clarifying ideas. Carefully selected media can provide a means of transmitting information that is often essential to communication. There are many educational situations when a photograph or a sound recording is indispensible.

Of the great variety and combinations of media now available, the competency-based education project will standardize on a few basic types. The following are the types that are most suitable for use in individualized and modularized instruction and at the same time come within the resource limits of the project:

- 2 x 2 color slides sets (either 35mm or 127 size film) produced by the CDC or from commercial sources
- Cassette audio tapes, CDC produced
- Slide-tape presentations in which the slide is automatically synchronized with the sound on the cassette tape
- Filmstrips from commercial sources

It should be noted that for various reasons, several common types of media will not be used. These include videotapes, 8mm films, single-concept loop films, and overhead transparencies. Rented or loaned 16mm films cannot well be incorporated in modularized programs, so their use will be limited to supplemental or enriching experiences to be scheduled

for large group instruction at the discretion of the classroom teacher. Films cannot be required as integral learning activities of the modules. If module writers decide to produce their own media for the modules they develop, they will need to use one of the accepted types.

Module writers will need to make the decision as to whether the module requires the use of some form of media to aid the student in reaching the performance objective. Among the reasons for selecting a media strategy in place of other forms of instruction are:

- Available readings are inappropriate or inadequate.
- The students are likely to have difficulty in comprehending a verbal description.
- A special sequence of illustration is essential.
- The performance objectives require information to be presented in pictorial or auditory form.
- Color is essential to the understanding of the topic.
- A change of stimulus is needed to maintain interest and increase learning.

If any form of media presentation is required, the module writer will need to plan the material carefully. The sequence of photographs should be organized for the desired instructional effect by planning a story board. Narrative, either written or tape recorded, that is to accompany the photos should be planned along with the pictures and written down. It will be necessary to check to be sure that the objects or scenes to be photographed will actually be available when required. As the plans develop, the module writer should consult the project's media director for suggestions, ideas, and for final approval of the proposed presentation.

Some module writers will be able to develop their own media, either in the form of slides or sound recordings. The same standards of type, quality and development process will apply as with project-produced materials. The project media specialists will provide as much help and cooperation as possible.

Cassette tape recordings can serve several distinct and important purposes in instructional modules. To aid students who have reading difficulties, audio tape recordings of necessary readings can be made by the classroom teacher or the module developer. Tape recordings can be made to accompany slides as descriptive or explanatory material, and tape recordings can be coordinated with illustrations or text in the instruction sheets. Audio recordings may be helpful in teaching students to identify sounds related to occupational operations, or they may be used to teach students correct pronunciation of technical terms. Recordings may be taken right to the work station to "talk the students through" an operation.

It is important to remember that all of the media materials to be developed for modular instruction must be for individual student use rather than for the teacher's use in group instruction. Slide-tape presentations and tape recordings therefore are to be self-instructional and easily available to students for use at any time they are ready for them. In the Learning Activities section of the module an appropriate reference will be made to the media in its proper sequence. Each piece of media will bear a title and the number of the module to which it belongs. A typical learning activity reference might be:

LISTEN to the cassette tape for module AB-21, "Checking Freon Charge," while looking at the diagrams in Instruction Sheet II.

GENERAL GUIDELINES FOR MEDIA MATERIALS

- Slides and other media productions must be directly aimed at helping students achieve the performance objectives of the module. They should not be used for entertainment or general enrichment.
- Media productions should not be used when paper reproductions in the form of instruction sheets would be instructionally superior (e.g., lists of terms to be memorized, diagrams to be studies and referred to).
- The number of slides and slide-tape presentations that can be produced within the module development project is strictly limited. The topics to be produced will need to be selected with care in order to gain the greatest effect within available resources.
- Module writers should review commercial catalogs of media materials to locate material available for purchase. It is important that the commercial product is directly concerned with the module topic.
- Care must be taken to avoid duplicating copyrighted materials. If in doubt, don't.
- When slides are to be made, use simple, uncluttered set-ups of readily available equipment and facilities.
- Scenes to be photographed must be examined to be sure to show good examples of safety and/or sanitation. (e.g., Be sure students are wearing safety glasses, equipment is shown in clean and safe condition.)
- If possible, use colorful cardboard arrows, spots, or captions in the picture to aid students in identifying the important elements of the scene.
- Whenever possible, use close-ups to be sure that students can see the details, even on a very small viewing screen.
- If students or other persons are to be included in the photo, make sure they are appropriately dressed and groomed.
- Ethnic and minority groups and women appearing in illustrations must be depicted as responsible and dignified persons. The picture must not appear derogatory or degrading.
- Minority groups and women must be shown in representative numbers in appropriate situations.

PROCEDURES FOR THE PRODUCTION OF SLIDE-TAPE PRESENTATIONS

Module writers who need the services of a media specialist to help prepare slide-tape presentations must do the preliminary planning and preparation before the photographer arrives at the production site. In order to ensure efficient production and an effective final presentation, follow these procedures:

1. Review your instructional material carefully and decide which areas will require supporting media or illustrations.

2. Select the media form most appropriate for the instructional needs. Avoid elaborate media when a simple instruction sheet will do the job.

3. If you decide to use color slides, your first step is to plan a set of storycards. These are index cards for planning and controlling the production of the slides and audiotape. Write your story ideas on the bottom of the card (one per card). In the upper left corner of the card draw a simple sketch of the proposed photograph.

4. Assemble your storycards and begin to put them in proper sequence. Plan a beginning and an ending and let your story (the instructional content) flow in an interesting and logical order. Place the cards on a large table or wall so you can see at a glance if it is complete, consistent, and properly sequenced. Rearrange, add or delete storycards to refine the effect.

5. After the instructional content is planned and sequenced, develop the script and refine the photo ideas.

6. Submit your storycards to your co-director for assistance and approval before proceeding further.

7. Prepare titles and artwork if possible. If you are unable to do this, write a complete description of needed artwork for others to do.

8. Select and prepare the photo locations. The site must be clean, orderly, and in the best safety conditions.

9. Prepare a definite time schedule so the photographer can move from one scene to another without delay. This is important.

10. Arrange for any "actors," such as students or workers, to be at the scene at the required time.

11. Be present and ready when the photographer arrives. Plan to complete all photographic work during this one session because he may not be able to return.

Module Evaluation

One supremely critical factor in the success of the competency-based education project is that of the quality of the final product itself--the module. Quality, in this sense, is not simply a matter of a well constructed device, free of typographical errors and containing technically correct information. It is a module that is capable of facilitating learning and changing student behavior.

To achieve and maintain the production of instructionally effective modules a process of continual evaluation will need to be utilized. Module writers will review their own work, compare it to exemplary models, and evaluate it by utilizing objective criteria. Further review, critique, and evaluation will be undertaken by the project co-directors, editor, and project director. It is highly desirable that open communication be maintained among the project team to identify any deficiencies and correct any misaprehensions.

In order to make the module review as complete and objective as possible, a module assessment checklist has been developed. This checklist includes evaluative criteria designed to focus on the instructional adequacy of the module, and keep it consistent with the performance objectives and the instructional setting in which it will be used. While each of the elements can be given a yes or no response, it is the reasoning and rational thinking behind each response that is most important.

The module assessment checklist may be used by the module writer as a self-check instrument. The checklist will be used by the co-directors, editor, and project director to evaluate modules as they are submitted. A sample copy of the checklist follows. 110

MODULE ASSESSMENT
CHECKLIST

MODULE NO. _____ MODULE TITLE: _____

ELEMENTS	YES	NO	?	COMMENTS
1. The introduction:				1.
a. describes what the student will learn.				a.
b. tells the student why the competency is needed.				b.
2. The directions are correct and explicit.				2.
3. The objectives are correctly stated.				3.
4. The learning activities:				4.
a. are consistent with the objectives.				a.
b. provide sufficient opportunity for the student to learn.				b.
c. are practicable and feasible.				c.
d. are appropriate to the student level.				d.
e. are clearly and succinctly stated.				e.
f. include a variety of learning modes.				f.
g. are limited to the necessary knowledge and skills.				g.
h. are free from harmful side effects.				h.
i. are largely self-instructional.				i.
j. provide student reinforcement.				j.
k. provide practice of skills in controlled settings.				k.
l. provide simulated or real-world tryout of competency.				l.
m. minimize the hazards of failure.				m.

ELEMENTS	YES	NO	?	COMMENTS
5. Student self-checks:				5.
a. are directly related to the objective.				a.
b. cover the required knowledge.				b.
c. provide the student with feedback.				c.
6. The instruction sheets:				6.
a. are clearly and correctly titled.				a.
b. are written at the student's level.				b.
c. provide the essential information.				c.
d. include appropriate instructional illustrations.				d.
e. are adequate in scope and depth.				e.
7. The instructor's final checklist:				7.
a. is in correct format.				a.
b. measures student achievement of the module objectives.				b.
c. is limited to the competencies stated in the objectives.				c.
d. states the desired performances in unambiguous terms.				d.
e. is based on observable student performance or the product of performance.				e.

Sample Module

Following this page is a sample module, "Cashing Checks." Many of the examples used in the HANDBOOK came from this module in the Bank Teller program. It is reproduced here in complete and assembled form.

Module writers may use the sample to verify general organization, format, capitalization, underlining, and other details.

MODULE BT-17

Objectives 11-28-29

BANK TELLER

CASHING CHECKS

Introduction

Many of the customers who come to your teller's window will have a check that they wish to turn into cash. Before the check can be cashed, it must be examined by the teller to be sure it is legally acceptable, then processed, and the cash dispensed. When batches of checks are presented by the customer, a somewhat more complex procedure is required. In this module you will learn how to handle these transactions.

Directions

Before you start to work on this module, be sure you have completed Module BT-12, "Using the Adding Machine," and Module BT-15, "Making Out Cash Tickets."

If you have completed these modules, read the three objectives below. If you think that you are already able to perform these tasks, read the Check-Out Activities on the back cover. Then either arrange with your instructor about doing the Check-Out Activities:

or

If you need to complete learning activities in order to be able to do the tasks, turn to p. 2 and go through the Learning Activities in the order given.

Objective

(1) Given a display of three checks with endorsements, examine each check and choose the one that is acceptable for cashing.

(2) Given a teller's window prepared for cashing checks and a teller's stamp, cash a single check. All items on the instructor's checklist should be performed acceptably.

(3) Given a teller's window prepared for cashing checks, a teller's stamp, and an adding machine, cash a batch of checks. All items on the instructor's checklist should be performed acceptably.

Learning Activities

1 → READ Jones and Laughlin, The Bank Teller: Tasks and Procedures, pp. 81-97.

(or)

2 → VIEW the slide-tape presentation BT-17, "Cashing Checks," in the Learning Center.

(or)

3 → COMPLETE THE PROGRAM in the A.B.A. booklet, Checks, pp. 26-97.

(or)

4 ✓ CHECK YOUR KNOWLEDGE of examining checks for acceptability by taking Student Self-Check I, EXAMINING CHECKS FOR ACCEPTABILITY.

5 → READ Instruction Sheet I, PAYING CURRENCY.

(or)

6 → PLAY THE ROLE of the bank teller in dispensing currency. Ask a fellow student or your instructor to request amounts of money in specific denominations. Using a supply of currency at the teller's window, go through the transactions of dispensing the correct currency.

(or)

7 → PRACTICE processing batches of checks in the learning laboratory. Get the practice materials for Module BT-17, and use the adding machine to prove your totals.

8 ✓ ARRANGE with your instructor to complete this module by going through the CHECK-OUT ACTIVITIES listed on the back cover.

Instruction Sheet I

PAYING CURRENCY

Handling currency is one of the most important functions you perform. Skill in handling currency can be acquired only through practice and application. In paying out currency, the following points should always be remembered:

1. Save time by asking the customer in which denominations he prefers his change.

2. Get the amount clearly in your mind. When paying out change from a split check, be sure to verify the change count with your adding machine, and check with the tape once more before handing out the change to the customer.

3. Count out large bills first.

4. Always perform two cash counts:

   a. One as the currency is removed from the drawer.
   b. The second as the cash is paid out to the customer.

5. Pick up each bill with the forefinger and thumb, roll it to separate it from the remaining bills, and place it in the other hand with the balance of bills to be paid out.

6. Don't count the currency faster than the customer can count; he will often recount and hold up the line while doing so.

7. If the customer changes his mind about the denomination, the request should be complied with cheerfully.

Student Self-Check I

EXAMINING CHECKS FOR ACCEPTABILITY

Suppose today's date is August 23, 1974. Look at each of the specimen checks given and examine them according to the negotiability points listed below. Place an "OK" in the box if the check is acceptable, or an "NG" if the check is not acceptable on that point.

After you have finished, compare your results with the correct responses given at the bottom of this page.

	Check #1	Check #2	Check #3
1. Bank drawn against			
2. Date			
3. Number and word amounts			
4. Maker's signature			
5. Payee and endorsement			
6. Alterations			

Correct Responses: All points are "OK" except: Check #1, the endorsement and the name of the payee do not agree; Check #3, the number amount and the written amount do not correspond.

ENDORSEMENT

John W. Roberts

SPECIMEN

164

M. R. Student
121 Main Street
Office, Kentucky 40475

8-23-19 74 73-130/421

PAY TO THE ORDER OF John W. Roberts $20.63

Twenty dollars 63/100 DOLLARS

FOR

B&O STATE BANK
Office, Kentucky 40475

M. R. Student

⑆042130⑆ ⑈202 457 5⑈

ENDORSEMENT

John W. Roberts

SPECIMEN

164

M. R. Student
121 Main Street
Office, Kentucky 40475

8-23- 19 74 73-130/421

PAY TO THE ORDER OF John W. Roberts $20.63

Twenty 63/100 DOLLARS

FOR

B&O STATE BANK
Office, Kentucky 40475

M. R. Student

⑆042130⑆ ⑈202 457 5⑈

ENDORSEMENT

John W. Roberts

SPECIMEN

164

M. R. Student
121 Main Street
Office, Kentucky 40475

8-23- 19 74 73-130/421

PAY TO THE ORDER OF John W. Roberts $20.63

Twenty-three 63/100 DOLLARS

FOR

B&O STATE BANK
Office, Kentucky 40475

M. R. Student

⑆042130⑆ ⑈202 457 5⑈

Instructor's Final Checklist

EXAMINING AND CASHING CHECKS

Check the student's performance in the following elements of examining and cashing checks.

Place an X in the appropriate box indicating not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, the item was impossible to complete, place an X in the "Not Applicable" box.

Performance Level: All items must receive a rating of FULLY ACCOMPLISHED (or Not Applicable). If any items are rated Not Accomplished, or Partially Accomplished, the student and instructor will discuss this and decide which learning activities must be repeated.

	Student Performance			
	Not Applicable	Not Accomplished	Partially Accomplished	Fully Accomplished
1. The student examined checks for acceptability and identified all checks that were not acceptable.	[ ]	[ ]	[ ]	[ ]
2. In the process of cashing a <u>single check</u>, the student:				
a. examined negotiability points of the check.	[ ]	[ ]	[ ]	[ ]
b. prepared cash-out ticket.	[ ]	[ ]	[ ]	[ ]
c. dispensed money	[ ]	[ ]	[ ]	[ ]
d. retained correct information for the records.	[ ]	[ ]	[ ]	[ ]
3. In the process of cashing a <u>batch of checks</u>, the student:				
a. examined negotiability points of each check	[ ]	[ ]	[ ]	[ ]
b. proved the total of the batch of checks	[ ]	[ ]	[ ]	[ ]
c. prepared the cash ticket.	[ ]	[ ]	[ ]	[ ]
d. dispensed cash to the customer.	[ ]	[ ]	[ ]	[ ]
e. processed the checks.	[ ]	[ ]	[ ]	[ ]
f. retained correct information for the records.	[ ]	[ ]	[ ]	[ ]

Check-Out Activities

The statements below explain the activities you must be able to complete in order to finish this module. As you go through each activity, your instructor will rate your performance using the Instructor's Final Checklist, EXAMINING AND CASHING CHECKS.

✓ Your instructor will provide a display of three checks with endorsements. Examine the face and endorsement of each check. Place an "X" across the check that is acceptable for cashing.

✓ Go to the teller's window. Remove the check from the container labeled "Customer," and cash the check.

✓ Go to the teller's window. Remove the checks from the container labeled "Customer," and cash the batch of checks.

A Cooperative Effort Between the Bureau of Vocational Education, State Department of Education and the Department of Vocational Education, College of Education, University of Kentucky

HANDBOOK

FOR THE DEVELOPMENT OF THE INSTRUCTOR'S MANUAL FOR A COMPETENCY-BASED VOCATIONAL EDUCATION PROGRAM

Curriculum Development Center
of Kentucky
102 Taylor Education Building
University of Kentucky
Lexington, Kentucky 40506

HANDBOOK FOR THE DEVELOPMENT OF THE INSTRUCTOR'S MANUAL FOR A COMPETENCY-BASED VOCATIONAL EDUCATION PROGRAM

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Curriculum Development Center for Kentucky
The University of Kentucky
151 Taylor Education Building
Lexington, Kentucky 40506

May 1975

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Overview of the Handbook

A manual for the use of the classroom instructor is an integral and important part of competency-based vocational education programs. It is designed to aid the instructor in conducting and managing a program in which learning modules are utilized.

The instructor's manual is to be produced simultaneously with the development of the learning modules, and will be a joint responsibility of the module writers, the subject-area co-directors, and the project director. There will be a separate instructor's manual for each of the competency-based vocational programs being developed.

This handbook is designed to guide those who will be producing the instructor's manual. It describes the purpose and use of the manual in the classroom and lists its contents. Those parts of the manual that are the responsibility of the module writers are discussed in detail and examples are provided.

Purpose and Use of the Instructor's Manual

The instructor's manual is to be an aid and a guide for the instructor as he or she becomes responsible for the learning management of a complete individualized performance-based vocational program. It is designed to help the instructor prepare for the new program, install it in the school, and direct its ongoing activities. Because the techniques and practices of competency-based instruction are unfamiliar to most instructors, the manual will provide much-needed information and will attempt to anticipate questions and problems that may arise in the course of using the instructional modules.

The manual is intended to be a ready reference for everyday use--a convenient source of information and help. Each subject matter area will have a manual developed specifically for that area and directly correlated with the student instructional modules of that program. It will assist the instructor in preparing for each module as students reach that point in their study. It will enable the instructor to make a quick review of the subject matter of a specific learning module and make sure that all of the learning materials are available for student use. By referring to the manual the instructor will be able to check whether the tools and equipment needed for a module are in good order and set up for the learning activity the student is about to undertake.

Notes provided by the module writer can alert the instructor to difficulties common to many students as they attempt to achieve the competency, or may suggest alternative learning experiences that may help individual students. There may be suggestions for small-or large-group

instruction, or for enriching experiences that will vary the routine of the class.

All of the material in the manual is designed to make the work of the vocational classroom instructor in a competency-based program more effective and his task easier. The ultimate goal to be kept constantly in mind is that of increasing student learning. The manual and all the specific items it contains must be directed toward that end.

Competency-Based Education

The various items contained in the instructor's manual are intended to fill some specific needs of teachers who are implementing competency-based programs in their classrooms. Some of the content material provides general background information, some material attempts to anticipate problems and questions and provide answers to the problems. Some items are included for ready reference by the instructor. Each class of content information is described briefly in the section that follows.

AN INTRODUCTION TO COMPETENCY-BASED EDUCATION

A concise description of the most important characteristics of competency-based vocational education serves as an introduction to the entire instructor's manual. The instructor can use this section to clarify his own understanding, and may also refer other interested persons to this discussion. A more thorough treatment of CBE will be given in the instructor's orientation sessions that precede the actual use of the competency-based materials in the classroom.

THE USE OF INDIVIDUALIZED LEARNING MODULES IN THE CLASSROOM

This section of the manual outlines the instructional procedures the instructor will employ when using the learning modules with students. Included will be a description of a student's typical activities as he completes a module and the instructor's involvement in the process. There will be an explanation of how the modules may be utilized in small-group and large-group instruction. The evaluation process will be

described. This section will be general enough in nature, not only to provide an introductory statement to the instructor but also aid administrators and other interested persons in understanding the process.

THE INSTRUCTOR'S ROLE IN COMPETENCY-BASED VOCATIONAL EDUCATION

Classroom instructors should understand that their role and function changes somewhat when operating within a competency-based program. The purpose of this section of the manual is not only to explain the new role, but to allay possible anxieties about the situation and resistance to change. The instructor must know that instead of making the work of instruction more mechanical and inhumane, CBE actually calls for more personal classroom interaction and enhances and professionalizes teaching. Specifically there will be descriptions of the instructor as:

- administrator in classroom and laboratory
- learning manager for the group
- resource person for learning activities
- diagnostician of student learning difficulties
- deviser of alternative learning experiences
- evaluator of student competency performance

The Program Sequence

The program sequence consists of a concise listing of all the modules and their related objectives in a complete vocational program. The modules are listed in the sequence that students are expected to complete them. There will be some differences in the organization of the program sequence depending on the way in which the instructional program is organized in the school.

- A program may have a series of modules which only the more rapid learners will be expected to accomplish. These should be designated as "supplemental" modules.
- Some programs may lead to entry into major occupations or sub-occupations, depending on how far the student proceeds in the module sequence. The program sequence list should indicate the exit points where students may leave the program and enter one of the sub-occupations.

It is the responsibility of the co-directors to compile the program sequence list for inclusion in the instructor's manual. The actual format should be that of the Module Master Sheet that has been drawn up in tentative form for the module development process. An example of this follows.

[Sample]

Program Sequence for Child Care Worker

MODULE NO.	MODULE TITLE	V-TECS OBJECTIVE NO.	OBJECTIVE
BLOCK 1	PROCEDURES AND ACTIVITIES		
CW-1	Handling Emergency Procedures	25 26 27	Situation concerning ill child Case of accidental injuries Disasters such as fire, tornado, etc.
CW-2	Performing Clerical Activities	52 53 54 55 56 57	Perform receptionist duties Maintain childrens attendance records Record child's progress Maintain transportation records Prepare activity report Inform parents
BLOCK 2	EQUIPMENT, FURNISHINGS AND SUPPLIES		
CW-3	Planning for Facilities	14	Plan for equipment and supplies
CW-4	Maintaining Facilities	44 45 46 47	Store equipment and materials Accept, record and store supplies Inventory equipment and supplies Requisition equipment and supplies
CW-5	Checking and Repairing Toys and Equipment	41 42 43	Check toys for repair and make minor repairs Determine whether appliances are functioning properly Make minor furniture and equipment repairs
BLOCK 3	CREATIVE ACTIVITIES		
CW-6	Planning Art Activities	1	Plan art activities
CW-7	Art Activities	15	Organize and guide art activities
CW-8	Planning Dramatic Play Activities	2	Plan dramatic play activities
CW-9	Dramatic Play Activities	16	Organize and guide dramatic play activities
CW-10	Planning Free Choice Play Activities	3	Plan free choice play activities

Student Proficiency Recordkeeping System

One of the instructor's major concerns in the management of competency-based vocational programs is that of maintaining adequate student records. In any one program there may be hundreds of instructional objectives which the student is expected to achieve. The instructor must assess the performance of each student as he attempts the competency and must record the progress of the student as he achieves each objective. If not thoroughly planned and organized, this could be a formidable task that could lead to confusion and misunderstanding. The instructor's manual will contain a suggested recordkeeping system designed to allow the instructor to maintain accurate information for himself and his students with a minimum of time-consuming effort. The basic structure of the system will be similar for all program areas, but the actual content of the recordkeeping instrument will, of course, be unique to each program.

The Competency-Based Instructional Modules

The instructor's manual will contain a copy of each of the modules in the complete program, exactly as they will be furnished to the student. This includes all instruction sheets, student self-checks, and instructor's final checklists. The modules will be arranged in proper sequence in the manual for ready reference.

Instructor's Guide To The Module

One of the most important sections of the instructor's manual is the detailed guide to each of the modules. The purpose of the guide is to help the instructor to prepare for the module, and to be sure the required facilities are ready for student use. Anything that may help the instructor to ensure that students can achieve the module objectives should be included in the guide. The guide attempts to anticipate the questions and problems that might arise in working with the module. It suggests to the instructor activities that may increase learning or make instruction more efficient. In order to make the guide easier to use a standard format has been developed. An example is included on the pages that follow. The module writer is responsible for completing a guide sheet for each module.

A short description of the contents of each section of the guide follows:

Instruction Sheets Included in the Module

List the title of each instruction sheet in its correct order. Insert in the box the number of the learning activity or activities in which that instruction sheet occurs.

Student Self-Checks Included in the Module

List the title of each student self-check in its correct order. Insert in the box the learning activity number in which the self-check occurs.

Textbooks and Reference Books Required

List each book required for use in the learning activities of the module. Insert the appropriate learning activity numbers in the box. Use a short reference, giving only the author's last name and book title.

e.g., Polk; The Practice of Printing

A full listing of the required books appears elsewhere in the instructor's manual.

Manuals and Specification Sheets Required

List the titles of any repair manuals, operation manuals, manufacturers' specification sheets, charts, or similar materials required in the module. Do not include those that are reproduced in the instruction sheets or that appear in the book section of the guide. Be specific as to what is needed.

e.g., Repair Manual for Caterpillar Tractor, Model D-3

Special Tools, Equipment & Supplies Required

List only those items that are unusual, or that require special preparation in some way. Do not list the facilities that are normally available in the classroom or laboratory and that are routinely used. For example, in the cashier-checker program a cash register is a standard piece of equipment and should not be listed, but a market basket of selected groceries that includes taxable and nontaxable items needs to be specially prepared by the instructor and therefore should be listed. The module writer will have to use discretion in each case.

Affective Objectives Suggested for this Module

All of the performance objectives in the V-TECS catalog and in the modules are related strictly to occupational skills. These are all

included in the cognitive and psychomotor domains of learning. Educators agree that an additional and essential element of student learning is that related to the affective domain. This includes attitudes, emotions, and values. In vocational education the affective elements are concerned with developing desirable and valuable feelings such as the following:

- satisfaction from the job
- positive attitude toward work
- cooperative attitude toward fellow workers
- habits of industry, responsibility and dependability
- values of honesty and integrity
- tolerance of dirt, hard work, and fatigue
- identification with the chosen occupation

For centuries good teachers have attempted to instill attitudes and values in their students. They have done this by precept, by providing students with a model worthy of emulation, and by providing students with experiences that tend to promote the desired values. This will not change in competency-based education. The teacher still has the responsibility to develop student values and attitudes that are socially acceptable and that will help the student succeed in his chosen occupation.

The module writer can assist the process of affective development by (1) suggesting affective goals where they may be appropriate in the learning modules, and (2) suggesting activities by the instructor or student designed to foster desired attitudes. This can be done in the "Affective Domain" section of the instructor's guide. In machine shop, for example, an affective goal might be:

> The student will exhibit pleasure and satisfaction in producing a high quality surface finish on the machined piece.

In order to achieve this, the instructor can:

Show students completed machine parts with a very high quality surface finish. He can express encouragement and enthusiasm as students attempt to achieve this type of finish.

In a child care program:

The student will develop commitment to aid handicapped children.

Suggested activity:

Arrange to have students visit a children's hospital where children are receiving physical therapy and personal care.

Notes to the Teacher

In this section the module writer should provide the classroom instructor with any additional information that will assist in making the module an effective learning device. This may consist of notes, hints, tips, warnings, suggestions, methods or ideas that may be helpful. A few examples of the types of notes that are appropriate follow:

- Safety precautions of which the student and instructor must be aware.
- Difficulties that students often experience with this operation.
- Special techniques that the instructor may use in helping the slow learner to acquire the skill.
- How the instructor can use the module in group instruction.
- Special conditions or siutations that must be present if the student is to succeed in achieving the objective.
- Management problems the instructor must solve in working with the module.
- Whether students may complete the module out of sequence.
- Suggested enrichment activities that will provide a change of experience for students.

Module No. _____

INSTRUCTOR'S GUIDE TO LEARNING ACTIVITIES

Module Title: _____

	INSTRUCTION SHEETS INCLUDED IN MODULE	Learning Activity Number(s)
I	Title:	
II	Title:	
III	Title:	
IV	Title:	
V	Title:	
VI	Title:	
VII	Title:	

	STUDENT SELF-CHECKS INCLUDED IN MODULE	
I	Title:	
II	Title:	
III	Title:	

TEXTBOOKS AND REFERENCE BOOKS REQUIRED	

MANUALS, SPECIFICATION SHEETS, ETC., REQUIRED	

Module No. _____

SLIDE TAPE PRESENTATIONS & AV MATERIALS REQUIRED	Learning Activity Number(s)

SPECIAL TOOLS, EQUIPMENT & SUPPLIES REQUIRED	

ATTITUDES AND VALUES TO BE DEVELOPED IN THIS MODULE (AFFECTIVE DOMAIN)

NOTES TO THE TEACHER TO ASSIST IN WORKING WITH THIS MODULE

[Sample]

Module No. BT-17

INSTRUCTOR'S GUIDE TO LEARNING ACTIVITIES

Module Title: CASHING CHECKS

INSTRUCTION SHEETS INCLUDED IN MODULE		Learning Activity Number(s)
I	Title: Paying Currency	5
II	Title:	
III	Title:	
IV	Title:	
V	Title:	
VI	Title:	
VII	Title:	

STUDENT SELF-CHECKS INCLUDED IN MODULE		
I	Title: Examining Checks for Acceptability	4
II	Title:	
III	Title:	

TEXTBOOKS AND REFERENCE BOOKS REQUIRED	
Jones and Laughlin; The Bank Teller: Tasks and Procedures	1

MANUALS, SPECIFICATION SHEETS, ETC., REQUIRED	
American Banking Association; "Checks"	3

SLIDE TAPE PRESENTATIONS & AV MATERIALS REQUIRED	Learning Activity Number(s)
"Cashing Checks," Slide Tape No. BT-17	2

SPECIAL TOOLS, EQUIPMENT & SUPPLIES REQUIRED	
Adding Machine	7
Batches of sample checks	7

ATTITUDES AND VALUES TO BE DEVELOPED IN THIS MODULE (AFFECTIVE DOMAIN)

1. Use this module to emphasize the importance of bank tellers accepting the bank's well though-out system of procedures.
2. Help students appreciate the need for a high degree of accuracy in the bank teller's job and to understand the consequences of even minor errors in a job such as cashing checks.

NOTES TO THE TEACHER TO ASSIST IN WORKING WITH THIS MODULE

1. To prepare materials for Learning Activity 7, you may use the sample blank check forms included in this manual, pp 27-31.
2. The instructor should place great stress on accuracy of procedure. Assure the student that speed will come later.
3. Alternative Learning Activity 6: Individual students may visit a local bank and arrange to spend some time outside the teller's cage observing the teller dispensing cash to customers.

Instructional Materials List

In order to prepare for the installation of the competency-based program, the classroom instructor needs to know what textbooks, reference manuals, AV materials, and other materials are required. To assist the instructor and school administrators in planning for the program and acquiring the necessary materials, a complete instructional materials list will be included in the instructor's manual.

The subject-matter co-directors will prepare the instructional materials list when the modules have been written. The "Instructor's Guide" section on the previous pages of the manual will provide the information necessary for the compilation of the list.

The listings will follow a standard format designed to give the instructor and school clerical services as much information as possible when they order materials from commercial sources. The module writers will provide the co-directors with the information as they develop the modules. We will attempt to supply complete, accurate and current publishing information, but if that is not always possible we will give as much information as we have. Co-directors will consult publishers' catalogs, the library, bookstore, Books in Print, and other sources to help complete the entries.

The entries for slide-tape presentations and other AV materials should indicate their source, whether it is the CDC or some other source.

In general, the materials list entry will take the following form:

(1) Author(s) or source
(2) Full title, underlined if book--in quotes if pamphlet, film, map, article.
(3) Publisher
(4) Address
(5) City, state, and zip code
(6) Date and price

[Sample]

Instructional Materials List

MACHINIST

1. Johnson, Harold V.
   General Industrial Machine Shop
   Chas. A. Bennett Co. Inc.
   809 W. Detweiller Drive
   Peoria, Illinois 61614
   1970, $6.69

2. Burghardt, Henry D., Aaron Axelrod, and James Anderson
   Machine Tool Operation, 5th Edition
   McGraw Hill Book Company
   330 West 42nd Street
   New York, N.Y. 10036
   1959, $8.50

3. South Bend Lathe Co.
   "How to Run a Lathe" (Booklet)
   South Bend Lathe Co.
   South Bend, Indiana
   1968, $1.00

4. Le Blond Lathe Co.
   "The Modern Turret Lathe," (Wall Chart)
   Le Blond Lathe Co.
   Cincinnati, Ohio
   Free

5. Curriculum Development Center for Kentucky
   "Setting up the Shaper for Flat Shaping,"
   (Slide-tape presentation No. MS-14)

6. ACI Films
   "Drill Press" series, #540,116 (4 filmstrips with cassettes)
   ACI Films
   35 W. 45th Street
   New York, N.Y. 10036
   1973, $65/series

MANAGEMENT HANDBOOK FOR THE DEVELOPMENT OF VOCATIONAL EDUCATION MODULES

Curriculum Development Center for Kentucky
The University of Kentucky
152 Taylor Education Building
Lexington, Kentucky 40506

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OVERVIEW OF THE HANDBOOK

The handbook is strictly a document to aid in the management of the resources that will be used in the summer production. It identifies the personnel available and explains how those personnel will be organized to produce a usable product in the time table specified. Also explained are the use of facilities and how payment will be handled.

PERSONNEL AVAILABLE

Material production in the following areas will be managed by personnel from the Curriculum Development Center and the Program Development Division:

1. Carpentry
2. Tractor Mechanics
3. Food Production
4. Auto Body
5. Dental Assistant
6. Bank Teller
7. Cashier Checker
8. Child Care Worker

The following personnel will be used in the production of these products:

1. Director of the CDC
2. Assistant Director of the CDC
3. Competency-based project director from the CDC
4. Curriculum specialists from the CDC
5. Supervisors from PDD
6. Editor from the CDC
7. Artist from the CDC
8. Media specialist from the CDC
9. Teacher/Writers
10. Content specialists
11. Secretaries from the CDC
12. Secretaries for the summer
13. Student artists
14. Student photographers
15. Editors for the summer

PERSONNEL RESPONSIBILITIES

DIRECTOR OF THE CDC

The director of the CDC will be responsible for the overall coordination of the summer development project. He will be used on a consulting basis to solve both administrative and production problems for all projects.

ASSISTANT DIRECTOR OF THE CDC

The assistant director of the CDC will be primarily responsible for the administrative aspects of the summer workshops. He will handle questions relating to funding, payment, personnel, etc. He will plan the intensive workshops being held on campus in terms of time, facilities, lodging, etc.

The assistant director will also assist the competency-based project director in solving production problems relating to all areas.

COMPETENCY-BASED PROJECT DIRECTOR

The competency-based project director will be primarily responsible for assisting the project co-directors in solving all problems relating to the production of the modules and the instructor's manual. Any questions which cannot be answered by the co-directors or from information from the developmental handbooks should be directed to the competency-based project director.

CURRICULUM SPECIALISTS FROM THE CDC AND SUPERVISORS FROM PDD

The curriculum specialists from the CDC and the supervisors from the PDD will serve as co-directors for the summer production effort. The co-directors from each vocational area will be directly responsible for the completion of the modules and the instructor's manual for their particular vocational area. They will work directly with the module writers and content specialists in their area. The co-directors will be present during the intensive workshop and visit the writers during the time they are working at their home station. The co-directors will work very closely with the secretaries and the director from the CDC to insure that office production moves at a fast and quality pace.

Due to the fact that the co-director from the PDD may have other summer responsibilities, a working agreement should be established between the co-director from the CDC and the co-director from the PDD.

EDITOR FROM THE CDC

The editor from the CDC will be responsible for the coordination of the total editing process. She will be responsible for coordinating the efforts of three editors who will be working for two months in the summer. Each of the three editors who will be working for two months will be assigned to two or more occupational areas. They will complete the initial editing of the materials received from the co-directors. The final editing will then be completed by the editor from the CDC.

The editor from the CDC will identify any backlog of materials in any one area and see that the workload is evenly dispersed between all editors. She will assist in the initial editing as the workload so requires.

ARTIST FROM THE CDC

The artist from the CDC will be responsible for the coordination of the production of all art work. He will be responsible for coordinating the efforts of three student artists who will be working for two months. Each of the three student artists will be assigned to two or more occupational areas. They will complete the initial drawing. This initial drawing will be reviewed by the artist from the CDC and needed corrections made.

The artist from the CDC will identify any backlog of needed drawings in any one area and see that the workload is evenly dispersed between all student artists. In addition to his management function, he will complete a large percentage of the initial and final drawing.

MEDIA SPECIALIST FROM THE CDC

The media specialist from the CDC will be responsible for the coordination of the production of all the mediated materials. He will be responsible for coordinating the efforts of the three student photographers who will be working for two months. Each of the three student artists will be assigned to two or more occupational areas. They will

produce the media in those assigned occupational areas. The media produced will be reviewed by the media specialist from the CDC and needed corrections made. The media specialist will work with module writers to develop ideas for media.

The media specialist from the CDC will identify any backlog of needed media in any one area and see that the workload is evenly dispersed between all student artists. He will complete the initial media production if the workload so necessitates.

TEACHER/WRITERS

The teachers identified in each occupational area will produce those modules assigned to them by the co-directors of the project. They will produce each module in accordance with the guidelines specified in the module production handbook. They will produce drafts of art work and materials for media in a usable form for the CDC artist and media specialist.

They will assist in the production of the instructor's manual following guidelines specified in the handbook for manual production.

They will work full time for two months. They will attend intensive workshops for at least three weeks.

CONTENT SPECIALISTS

The content specialists will review all needed materials for technical accuracy. The time of the review must fit into the overall production plan of the specific vocational area.

SECRETARIES FROM THE CDC AND SECRETARIES FOR THE SUMMER

The secretaries will be responsible for typing all the materials for the modules and the teacher handbook. They will work very closely with the director of the CDC and the co-directors to insure that the secretary workload is evenly dispersed and that office production moves at a quality and rapid pace. The secretaries will follow the format and style established.

STUDENT ARTISTS

The student artists will work very closely with the artist from the CDC in producing all needed art work for the modules and the teacher handbook.

STUDENT PHOTOGRAPHERS

The student photographers will work very closely with the media specialist from the CDC in producing all mediated materials for the modules and the teacher handbook. They will produce finished slides ready for inclusion in the learning packages.

EDITORS FOR THE SUMMER

The editors for the summer will work very closely with the editor from the CDC in editing all materials for the modules and the teacher handbook.

USE OF FACILITIES

The summer schedule is as follows:

1. Duration of workshop - June 2-July 31, 1975
2. June 2-6 - intensive workshop U.K.
3. June 9-20 - work at home station with co-director supervision
4. June 23-27 - intensive workshop U.K.
5. June 30-July 18 - work at home station with co-director supervision
6. July 21-25 - intensive workshop U.K.
7. July 28-31 - wrap up

The intensive workshops for the weeks of June 2-6, June 23-27, and July 21-25 will be held at the University of Kentucky in the Agricultural Science Center North. Rooms will be used according to the following plan:

1. Room N-12 - All general sessions
2. Room A-7 - Carpentry
3. Room S-221 - Auto Body
4. Room N-320 - Bank Teller
5. Room N-120 - Child Care and Food Production
6. Room S-301 - Dental Assistant, June 2-6
7. Room S-109 - Dental Assistant, June 23-27, July 21-25
8. Room S-201 - Cashier-Checker

In each room will be chairs and tables suitable for writing.

PAYMENT

1. The teacher/writers will receive a stipend of $400. Payment will be as follows:

   a. $129 before July 1
   b. $271 upon completion of project as determined by co-directors

2. Single rooms have been reserved at the Continental Inn on New Circle Road for each participant for the dates of June 1-5, June 22-26, and July 20-24. They have been reserved under the name of the participant or under the name of Bruce Carpenter.

3. A per day allowance of $29 will be allowed for each participant. This allowance will include $16 for the room and $13 for food.

4. The participant will pay for the use of the room at the Continental and for all food. No receipts are needed. The $29 allowance will then be paid to the participant to cover the expenses.

5. If the participant does not wish to stay at the Continental Inn, he/she must contact Bruce Carpenter at least three weeks before the beginning of the workshop. The individual is then responsible for making his/her own reservation. Sixteen dollars will still be allowed for lodging.

6. Travel will be paid at a rate of $.12 per mile for the miles traveled by each participant. The participant must submit the number of miles traveled.

7. A commuting participant will be paid for all travel miles and for those meals eaten away from home.

8. The regular university forms for consultants must be used by each teacher/writer. One form should be submitted at the end of each intensive workshop to show the total expenses for that particular week. A separate form should be submitted at the end of the first intensive workshop showing the stipend of $129. A second form should be submitted at the end of the second intensive workshop showing a stipend of $32. A third form should also be submitted at the end of the last intensive workshop showing a stipend of $239. Due to the different sources of funding, six different forms for payment must be completed and signed by each teacher/writer.

9. Content specialists can be paid at a rate of $75 per day, $8 per hour, or $4 per objective. Regulations pertaining to travel, food, and lodging are the same as for the teacher/writers. Due to separate funding sources, university consultant forms must be submitted before June 30 for those expenses incurred for content specialists before that time and additional forms for expenses incurred after July 1. Separate forms are needed for honorarium and for travel, lodging, and food.

Note: Refer to the following pages for example forms.

STATEMENT OF EXPENDITURE
FOR
CONSULTANTS AND OFFICIAL GUESTS

College of Education — University of Kentucky

Name: John A. Doe — Social Security #: 123-45-6789

Home address: 123 Main Street, Morehead, KY 40351 — Phone No.: 987-6543

Institution Represented: Morehead State University

Description of Consultation: Attended a workshop to develop competency-based instructional materials.

Dates of Consultation: From June 2, 1975 To June 6, 1975

U.K. Department Receiving Consulting Service: Vocational Education/CDC

Honoraria . . . . . $

Expenses Claimed:

Transportation:

Airplane	$
Train	
Bus	
Limousine or taxi	
Personal Auto (Total Miles 124 @ 12¢a mile)	14.88
Rental Car	
Other (Telephone, Baggage, tips, parking, etc.)	
Total Transportation	$
Lodging (No. of Nights 5)	$ 80.00
Food	$ 65.00
Per Diem: (Lodging and Meals)	$
Total Claimed	$ 159.88

Signature of Claimant John A. Doe Date 6-6-75

Note: These forms do not have to be typed.

Total Approved $

STATEMENT OF EXPENDITURE
FOR
CONSULTANTS AND OFFICIAL GUESTS

College of Education — University of Kentucky

Name: John A. Doe — Social Security #: 123-45-6789

Home address: 123 Main Street, Morehead, KY 40351 — Phone No.: 987-6543

Institution Represented: Morehead State University

Description of Consultation: Attended a workshop to develop competency-based instructional materials.

Dates of Consultation: From June 2, 1975 To June 6, 1975

U.K. Department Receiving Consulting Service: Vocational Education/CDC

Honoraria . . . . . $ 129.00

Expenses Claimed:

Transportation:

Airplane	$
Train	
Bus	
Limousine or taxi	
Personal Auto (Total Miles _____ @ 12¢a mile)	
Rental Car	
Other (Telephone, Baggage, tips, parking, etc.)	
Total Transportation	$
Lodging (No. of Nights _____)	$
Food	$
Per Diem: (Lodging and Meals)	$
Total Claimed	$ 129.00

Signature of Claimant John A. Doe — Date 6-6-75

Note: These forms do not have to be typed.

155
11

Total Approved $

SUGGESTIONS FOR PRODUCTION SEQUENCE

1. After the modules are sequenced and organized in terms of difficulty and the teachers identified, they should be divided among the module writers on an individual basis. The writers should realize that they are responsible for completing the modules assigned to them.
2. All materials should be ordered to include commercial materials and organized by teacher use. Materials should be ordered which the teachers have identified.
3. The first two days of the initial workshop will be used for an explanation of the module production handbook and the manual production handbook. This time will vary depending on need.
4. The last three days of the first intensive workshop will be used in the actual production of modules by the teachers under the direction of the co-directors. One to two modules should be completed by the writers before the end of the Friday session. These modules should be left with the co-directors.
5. The modules should be edited by the co-directors and given to the secretaries with an explanation for typing.
6. Once typed, the material should go to the co-directors for additional review and change. After this review, the material should go back to the secretary for additional typing.
7. The editor from the CDC should then receive the material. She would then disperse the material to the designated editor or the editor with the smallest workload.

8. After the initial editing, the material should go to the secretaries for retyping.
9. Once retyped, the material should be reviewed by the co-directors. The material should be reviewed by the content specialist at this time and returned to the co-directors.
10. After this review and retyping, final editing by the editor of the CDC should then take place.
11. After final editing, the material should go to the director of the CDC to be taken to duplication.
12. This production sequence will be ongoing with each new module or group of modules.
13. Materials that need drawings should be reviewed by the co-directors.
14. Once the decision is made by the co-directors that a drawing is needed, it should be taken to the CDC artist. The CDC artist will disperse the art work to the designated student artist or to the artist with the smallest workload.
15. Once the art work is completed by the student artist, it will be reviewed by the artist from the CDC. If approved, the art work will be returned to the co-directors who in turn will give the material to the secretaries if typing is needed or to the editor from the CDC if editing is needed.
16. Media production should follow the guidelines as specified in the module production handbook.
17. A meeting will be held each Monday morning at 8:30 a.m. at the CDC involving at least one co-director (both preferred), the media specialist, artist, and editor from the CDC, the assistant director, the competency-based project director, and the CDC director. Progress and problems will be discussed.

18. The following time tables should be accomplished in order to be ready for duplication by August:

    a. June 6 - 1-2 modules complete per teacher

    b. June 13 - 10% of modules complete

    c. June 20 - 22% of modules complete

    d. June 27 - 36% of modules complete

    e. July 4 - 50% of modules complete

    f. July 11 - 64% of modules complete

    g. July 18 - 85% of modules complete

    h. July 25 -100% of modules complete

    The writers should realize the time schedule they should follow and should know the number of modules they should complete each week.

19. Materials should be mailed to the co-directors from the teachers on a weekly basis.

20. The co-directors should visit with the writer at home as many times as time and energy will allow.

21. Material for editing will go to the editor from the CDC who will then disperse the material to the assistant editors.

22. The material for art work will go to the artist from the CDC who will then disperse the material to the student artists.

23. The request for mediated material will go to the media specialist from the CDC who will then determine which student photographer will fill the request.

24. The second and third intensive workshops will be primarily for the production of materials in a controlled environment. Materials can also be reviewed and problems identified and eliminated.

25. The following secretarial assignments will be followed:

    1. Carpentry - Annette
    2. Child Care and Foods - Lynn
    3. Bank Teller and Cashier Checker - Pam
    4. Tractor Mechanics - Lynne
    5. Dental Assistant - Summer Secretary
    6. Auto Body - Summer Secretary

    These assignments will be followed as long as production in all areas are equal. The co-directors from each area will work directly with their secretary as long as a backlog of materials does not develop. When a backlog in any one area develops, the co-directors from that area will take the materials to the director of the CDC. He will then disperse the materials to other secretaries who will complete the typing. The director of the CDC will be responsible for seeing that office production runs smoothly and evenly. However, this smoothness in office production can only be secured if there is a close communication between co-directors, secretaries, and the CDC director.

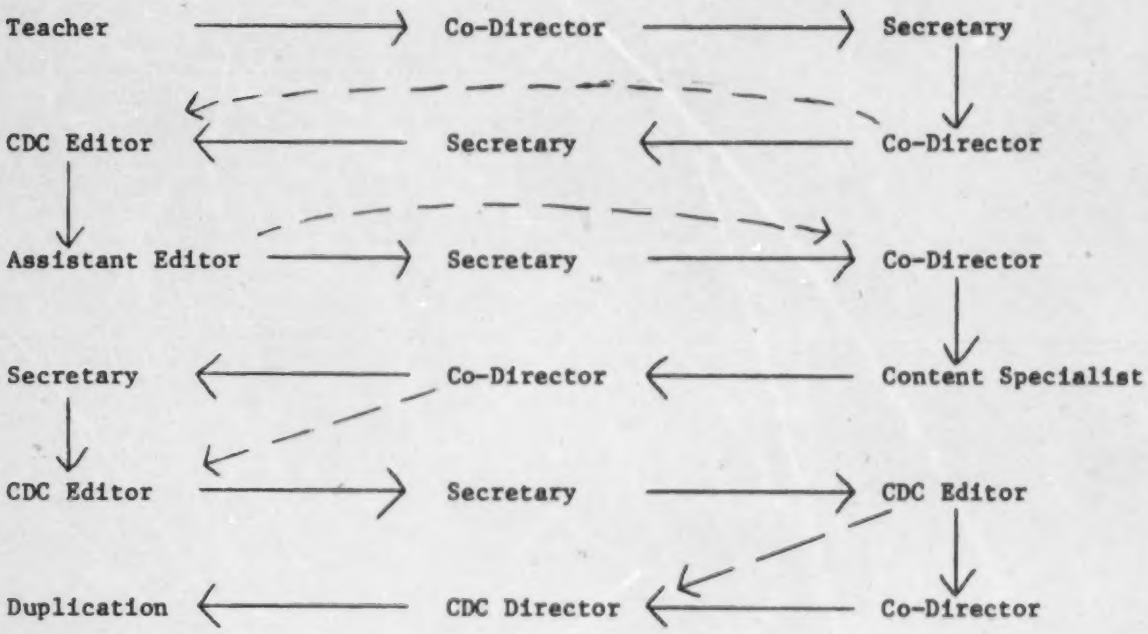
26. If an artist, an editor, or a media specialist has specific work to be completed in a certain vocational area, that work will be taken to the secretary responsible for that area.

27. Letters and other types of communication for the co-directors will be handled by the assigned secretary for the summer.

28. Letters and other types of communication for the director and assistant director of the CDC will be handled by Lynne Frasure. Typing for the competency-based project director will be handled by Pam Campbell.

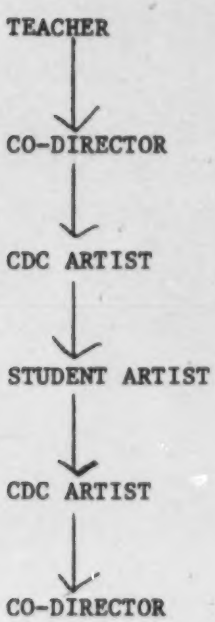
PRODUCTION SEQUENCE

WRITTEN MATERIAL



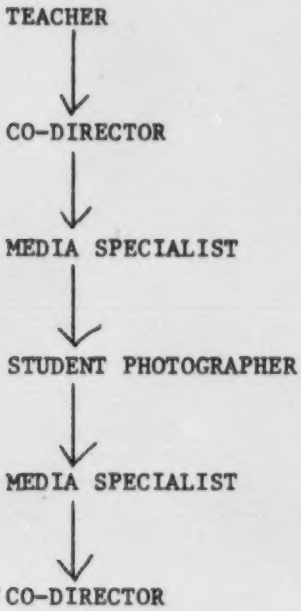
PRODUCTION SEQUENCE

ART MATERIAL



PRODUCTION SEQUENCE

MEDIATED MATERIAL/SLIDE-TAPES



APPENDIX B

COMPETENCY EVALUATION
AND
COMPLETION RECORD

COMPETENCY BASED EDUCATION

Student Name _____ Occupation _____

Beginning Date _____ Ending Date _____

Module #	Objective #	Date Started	Date Ended	Level of Achievement	Rate of Completion	Overall Level Of Performance*	Comments

Module #	Objective #	Date Started	Date Ended	Level of Achievement	Rate of Completion	Overall Level Of Performance*	Comments

* 1 - Achieved at level specified in objective

2 - Exceeded minimum level specified in objective

3 - Did not achieve

MODULE EVALUATION FORM

Kentucky Competency-Based Vocational Education Project

TITLE of MODULE: _____

Module No. _____ Teacher/Evaluator _____

Check [✓] your responses to the following module components:

I. THE INTRODUCTION: ____Very helpful; ____Somewhat helpful; ____Not helpful

____Poorly written; ____Well written;

Needs these changes: _____

_____

II. OBJECTIVES: ____Well stated; ____Difficult to understand; ____Not related

Needs these changes: _____

_____

III. LEARNING ACTIVITIES:

____Too easy; ____Too difficult; ____Just about right

____Too many; ____Not enough; ____About the right number

____Too much knowledge or theory; ____Not enough; ____About right

____Reading level too high; ____Too low; ____About the right level

____Activities poorly sequenced; ____Activities well sequenced

____Activities lack variety, dull; ____Activities varied and interesting

____Directions unclear, confusing; ____Directions clear, easily followed

____Too much skills practice; ____Too little practice; ____About right

____Practice steps too large; ____Steps too small; ____About the right size

____Too much time required; ____Module is very short; ____About right length

____Too much teacher help required; ____Teacher not used; ____About right

____Slide-tapes helpful to learning; ____Slide-tapes not helpful

Needs these changes: _____

_____

_____

IV. STUDENT SELF-CHECKS:

_____Helpful to students; _____Not very helpful

_____Used by student; _____Avoided whenever possible

Needs these changes: _____

_____

V. INSTRUCTION SHEETS:

_____Too long, wordy; _____Too short, incomplete; _____About the right length

_____Helpful to learning; _____Not very helpful

_____Not related to objectives; _____Right to the point

_____Poorly written, difficult to understand; _____Well written

_____Contain inaccurate information; _____Generally very accurate

_____Illustrations not helpful; _____Illustrations very good

Needs these changes: _____

_____

VI. INSTRUCTOR'S FINAL CHECKLIST:

_____Too many items, time consuming; _____Too few items; _____About right

_____Some trivial items; _____All items are important

_____Some items difficult to evaluate; _____Easy to evaluate

_____Items poorly stated; _____Items well written

Needs these changes: _____

_____

VII. STUDENT REACTION:

_____Liked working on the module; _____Disliked it very much; _____Didn't care

_____Completed most of the learning activities; _____Bypassed activities

TEACHER'S GENERAL REACTION:

_____Excellent module just as it is. I would use it again.

_____Good, but needs some revision.

_____Weak; needs a great deal of revision.

_____I would not use it until it is completely rewritten

Needs these overall changes: _____

_____

FIELD TEST OBSERVATION RECORD

KENTUCKY COMPETENCY-BASED VOCATIONAL EDUCATION PROJECT

PROGRAM _____

SCHOOL _____ TEACHER _____

DATE OF VISIT _____ PROGRAM MONITOR _____

Place a check [ ] on the line in front of the appropriate response.

I. Class activities at time of visit:

_____All students were working on modular program
_____Some students working on modules, some on other activities
(specify other)_____
_____Class was not working on modules (specify what and why)_____
_____

II. Teacher activities at time of visit (check one or more):

_____Working with students individually
_____Working with small groups of students
_____Holding large group demonstration, discussion, lecture
_____Working on project or "live work"
_____Inactive
_____Other (specify)_____

III. Problems reported by teacher during visit:

_____Management of learning materials and resources
_____Class organization and management
_____Lack of needed equipment and/or supplies
_____Problems with administration
_____Deficiencies in learning modules
_____Problems with supporting media
_____Lack of instructional reference material
_____Poor student motivation
_____Students having difficulty with subject matter
_____Teacher feels unprepared for CBE
_____Teacher feels weak in knowledge of subject matter
_____Teacher feels overworked
_____Other (specify)_____
_____

IV. Positive aspects of program reported by the teacher:

_____Students show evidence of learning
_____Students are interested, motivated
_____Students are working at their own pace
_____Program perceived as improvement on traditional program
_____Teacher feels effective
_____Other (specify)_____

V. Reactions gathered from monitor's conversations with students:

_____Like modular program
_____Dislike program
_____Don't care
_____Think they are learning
_____Not learning much
_____Don't know

VI. General observations by program monitor during visit:

_____Students appear busy, working hard
_____Students mostly busy, some apathy
_____A great deal of time being wasted
_____Confusion and inefficiency evident
_____Teacher not using modules as they were designed
_____Students not doing activities as they were designed
_____Teacher and student activities being carried out well
_____Final checkout activities being carefully followed
_____Final checkout activities being largely ignored
_____Organization and management problems hampering program
_____Facilities and resources hampering program
_____Other (specify)_____
_____

Immediate solutions suggested: _____

_____

Long-range solutions suggested: _____

_____

APPENDIX C

Agenda

Workshop for Developing Competency Based
Individualized Materials

June 2-6, 1975

Agricultural Science Building - Room N-12

MONDAY, JUNE 2, 1975

8:45 - 9:15	Registration and Coffee	
9:15 - 9:30	Welcome and Introduction	*Herbert Bruce*
9:30 - 9:45	Overview of Competency Based Education	*Charles Wade*
9:45 - 10:00	The V-TECS Process	*Bruce Carpenter*
10:00 - 10:30	The Instructional Module	*Glen Fardig*
10:30 - 11:00	Break	
11:00 - 11:30	Individualized Instruction	*Martha Keeton*
11:30 - 12:00	Overview of the Task	*Bruce Carpenter*
12:00 - 1:30	Lunch	
1:30 - 1:45	Organize Objectives	*Glen Fardig*
1:45 - 3:00	Group Work Session I	
3:00 - 3:30	Break	
3:30 - 4:30	Writer's Handbook	*Glen Fardig*

TUESDAY, JUNE 3, 1975

8:30 - 9:00	Review Writer's Handbook	*Glen Fardig*
9:00 - 10:30	Group Work Session II	
10:30 - 11:00	Break	
11:00 - 11:15	Optional Question Session	
11:15 - 12:00	Group Work Session II Continued	
12:00 - 1:30	Lunch	
1:30 - 2:30	Developing Media	*Tom Vantreese*
2:30 - 3:00	Group Work Session III	
3:00 - 3:30	Break	
3:30 - 3:45	Optional Question Session	
3:45 - 4:30	Group Work Session III Continued	

WEDNESDAY, JUNE 4, 1975

8:30 - 9:00	Progress Report	*CO-Directors*
9:00 - 10:30	Group Work Session IV	
10:30 - 11:00	Break	
11:00 - 12:00	Instructor's Manual	*Glen Fardig*
12:00 - 1:30	Lunch	
1:30 - 3:00	Group Work Session V	
3:00 - 3:30	Break	
3:30 - 3:45	Optional Question Session	
3:45 - 4:30	Group Work Session V Continued	

THURSDAY, JUNE 5, 1975

8:30 - 9:00	Preparing Illustrations	*Ray Gilmore*
9:00 - 10:30	Group Work Session VI	
10:30 - 11:00	Break	
11:00 - 11:15	Optional Question Session	
11:15 - 12:00	Group Work Session VI Continued	
12:00 - 1:30	Lunch	
1:30 - 2:00	Progress Report	*Co-Directors*
2:00 - 3:00	Group Work Session VII	
3:00 - 3:30	Break	
3:30 - 4:30	Group Work Session VII Continued	

FRIDAY, JUNE 6, 1975

8:30 - 9:00	Module Evaluation	*Glen Fardig*
9:00 - 9:30	Management Schedule	*Bruce Carpenter*
9:30 - 10:30	Group Work Session VIII	
10:30 - 11:00	Break	
11:00 - 12:00	Group Work Session VIII Continued	
12:00 - 1:30	Lunch	
1:30 - 3:00	Group Work Session VIII Continued	
3:00 -	Business Session	*Bruce Carpenter*

All meetings except the group work sessions will be held in N-12, Agricultural Science Building.

The optional question sessions are designed to allow specific people or groups of people to ask questions relating only to their instructional area. These sessions will be held in N-12. Those individuals or groups having no questions will continue in the group work session.

Agenda

Workshop for Developing Competency-Based
Individualized Materials

June 23-27, 1975

Agricultural Science Building - Room N-12

MONDAY, JUNE 23, 1975

9:00 - 9:15	Evaluation of Modules	Glen Fardig
9:15 - 9:30	Production Status	Bruce Carpenter
9:30 - 4:30	Module Production	Module Writers

TUESDAY, JUNE 24, 1975

8:30 - 4:30	Module Production	Module Writers

WEDNESDAY, JUNE 25, 1975

8:30 - 4:30	Module Production	Module Writers

THURSDAY, JUNE 26, 1975

8:30 - 4:30	Module Production	Module Writers

FRIDAY, JUNE 27, 1975

8:30 - 3:00	Module Production	Module Writers
3:00 -	Closing Session	Bruce Carpenter

At 9:00 A.M. Tuesday morning in Room N-12 will be a meeting of the co-directors, Bruce Carpenter, and Glen Fardig. Additional meetings will be scheduled based on the needs identified at the Tuesday meeting.

Coffee will be available each morning at 8:30. Regular breaks will be conducted with refreshments at 10:30-11:00 A.M. and 3:00-3:30 P.M.

Agenda

Workshop for Developing Competency Based
Individualized Materials

July 21-25, 1975

Agricultural Science Building - Room N-12

MONDAY, JULY 21, 1975

9:00 - 9:30	Production Status	Herbert Bruce
9:30 - 4:30	Module Production	Module Writers

TUESDAY, JULY 22, 1975

8:30 - 4:30	Module Production	Module Writers

WEDNESDAY, JULY 23, 1975

8:30 - 4:30	Module Production	Module Writers

THURSDAY, JULY 24, 1975

8:30 - 4:30	Module Production	Module Writers

FRIDAY, JULY 25, 1975

8:30 - 3:00	Module Production	Module Writers
3:00 -	Closing Session	Herbert Bruce

At 9:00 a.m. Tuesday morning in Room N-12 will be a meeting of the co-directors and Herbert Bruce. Additional meetings will be scheduled based on the needs identified at the Tuesday meeting.

Coffee will be available each morning at 8:30. Regular breaks will be conducted with refreshments at 10:30-11:00 a.m. and 3:00-3:30 p.m.

AGENDA

Inservice Education Workshop for Field Testing
Competency Based Individualized Instructional Materials

August 14-15

Agricultural Science Building

THURSDAY, AUGUST 14th

9:00 - 9:10	Introduction	Bruce Carpenter
9:10 - 9:30	Basic Concepts of Competency Based Instruction	Herbert Bruce
9:30 - 10:00	How the Modularized Program Was Developed	Bruce Carpenter
10:00 - 10:20	Components of a Module	Thomas/Smotherman
10:20 - 10:30	Break	
10:30 - 12:00	Analyze Modules & Instructor's Manual	Teachers/Co-directors
1:00 - 1:30	Role of Teachers and Students	Maddox/Iverson
1:30 - 3:00	Walk through Module	Keeton/Hill
3:00 - 4:00	Discussion [Questions often asked about CBE]	

FRIDAY, AUGUST 15th

9:00 - 9:30	Organize Learning Lab	Martin/Vantreese
9:30 - 10:00	What To Do Before Students Come	Cave
10:00 - 10:30	Orienting Students to CBE	Threlkeld/Kizer
10:30 - 11:00	Daily Management of Instruction	Briscoe
11:00 - 11:30	Slow and Fast Learners	Schrader
11:30 - 12:00	Record Keeping and Grading	Turner/Insko
1:30 - 3:00	Teachers Duties - Field Test	Bruce Carpenter